

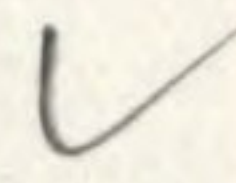
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THE
NATURAL HISTORY
OF
BRITISH FISHES,
INCLUDING
SCIENTIFIC AND GENERAL DESCRIPTIONS
OF THE
MOST INTERESTING SPECIES,
AND AN
EXTENSIVE SELECTION
OF
ACCURATELY FINISHED COLOURED PLATES.

TAKEN ENTIRELY FROM
ORIGINAL DRAWINGS,
PURPOSELY MADE FROM THE SPECIMENS IN A RECENT STATE,
AND FOR THE MOST PART WHILST LIVING.

VOL. IV.

BY E. DONOVAN, F.L.S.
AUTHOR OF THE NATURAL HISTORIES OF BRITISH BIRDS,
INSECTS, SHELLS, &c.

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1806.

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THE
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AND AN

EXPLANATION

Königliche
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BY F. DONOVAN, F.R.S.

AUTHOR OF THE NATURAL HISTORY OF THE BRITISH FISHES.

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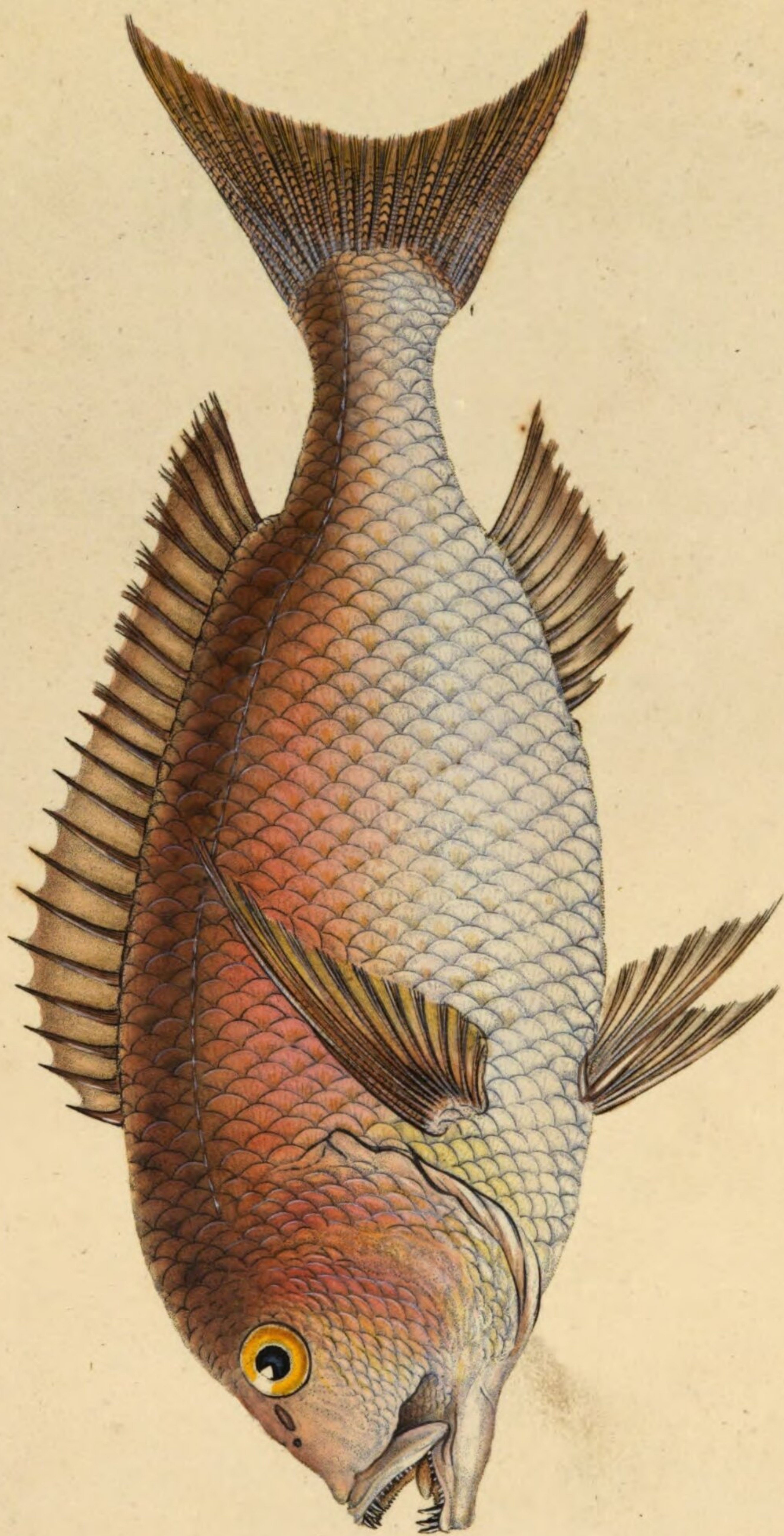
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1800.



THE
NATURAL HISTORY
OF
BRITISH FISHES.

PLATE LXXIII.

SPARUS DENTEX.

FOUR-TOOTHED SPARUS.

* *PISCES THORACICI.*

GENERIC CHARACTER.

Teeth strong, those in front disposed in one series, or more: grinders somewhat obtuse and crowded: lips doubled in most species: branchiostegous membrane five-rayed, cover scaly: body compressed: lateral line incurvated behind: pectoral fin rounded.

SPECIFIC CHARACTER.

Tail furcated: body reddish, variegated with fuscous: four teeth in each jaw larger than the others.

SPARUS DENTEX: cauda furcata, corpore rufescente fuscoque variegato, dentibus quatuor majoribus.

PLATE LXXIII.

SPARUS DENTEX. *Linn.—Arted. Gen. 36. Syn. 60.—Bloch.*
t. 268.

On the 9th of April, 1805, we were agreeably surprised at receiving from one of our assiduous correspondents, a fresh specimen of this curious Sparus, as a supposed overgrown individual of the Lunated gilt-head, Sparus lunatus. This acquisition is of the more importance, as the species is not mentioned by Pennant, nor any other writer on Ichthyology, as having before appeared in the British seas; neither do we recollect a specimen of it as a foreign fish in any collection of natural history we have seen. The particulars of its capture are few, and of little interest: it was caught in the sea off the coast of Hastings, in Sussex, and brought by one of the fishing-smacks, with other fish, to Billingsgate for sale, where our correspondent met with it. As a Mediterranean fish, Sparus Dentex is perfectly well known to the continental naturalists: its importance rests upon its being British, and in this point of view we shall be allowed to consider it as a valuable accession to the *British Fauna*.

Generally speaking, this is a fish of large size. Willughby observes, that small fishes of this species are rarely taken, and the same circumstance has been mentioned by later writers. The smallest of those that occur in common, according to Bloch, are seldom less than three or four pounds in weight. In the environs of Rome they usually exceed that size by at least one half. Our specimen was considerably larger, weighing about sixteen pounds; but this even is comparatively trifling to some occasionally found in the warmer parts of Europe. In the fish-markets at Narbonne, where this species of Sparus is frequently

PLATE LXXIII.

exposed for sale, they have been often seen of twenty, or thirty pounds each. The largest on record was, however, far superior to those, weighing no less than seventy-six pounds*: it is mentioned by Duhamel, on the authority of Gortier, who sent him an account of this gigantic example of *Sparus Dentex*.

A more voracious fish is scarcely known; and when we consider its ferocious inclination, and the strength of its formidable canine teeth, we must be fully sensible of the great ability it possesses in attacking other fishes, even of a superior size, with advantage. It is asserted, that, when taken in the fishermen's nets, it will seize upon the other fishes captured with it, and mangle them dreadfully. Being a swift swimmer, it finds abundant prey, and soon attains to a considerable size. During the winter it prefers deep waters, but in the spring, or about May, it quits this retreat, and approaches the entrance of great rivers, where it deposits its spawn between the crevices of stones and rocks.

The fisheries for this kind of *Sparus* is carried on upon an extensive scale in the warmer parts of Europe. In the rivers of Dalmatia and the Levant, the capture of this fish is an object of material considera-

* An inadvertency of expression, that may possibly mislead, has escaped from the pen of Dr. Shaw, in treating of *Sparus Dentex* in his *Gen. Zoology*. This fish, he observes, is of the *general size and shape of a carp*; but, from the preceding remarks, it will evidently appear, that its ordinary size is much superior to the carp, at the same time that its figure bears but a very remote resemblance indeed to that well-known fish. *Vide Gen. Zool. Vol. IV. p. 2.—408.*

PLATE LXXIII.

tion, both to the inhabitants generally, as a wholesome and palatable food, when fresh ; and to the mercantile interests of those countries as an article of commerce. They prepare the fish according to ancient custom, by cutting it in pieces, and packing it in barrels with vinegar and spices, in which state it will keep perfectly well for twelve months.

The plate accompanying this description may render any minute, or copious detail of the general appearance of this fish superfluous: the drawing was made, and the colours copied with fidelity, from the specimen, within two or three hours after we became possessed of it. We are aware, however, from the descriptions given of this fish by other writers, that in the last particular it is liable to considerable variations, not only in different stages of its growth, but at different seasons of the year. The back and sides, to a short depth below the lateral line, is generally reddish, more or less tinged with yellow, and varied with obscure spots, or clouds of fuscous. The highly metallic gloss, or silvery splendour, which Bloch speaks of, was scarcely visible in our specimen: he also speaks of the ventral and anal fin being deep yellow, the pectoral bordering upon red, and the dorsal fin and tail yellow, edged with blue or bluish, neither of which circumstances were observable in our specimen. He allows, that the fish assumes a purple colour as it grows old, and that it is said to become white in winter. These particulars are therefore variable, and cannot well be said to constitute any part of its specific character, with the exception of the back colour, which appears to be more constant than any other: this even might perhaps be omitted in defining the species, for the four large distinct canine teeth in the front of each jaw, sufficiently distinguishes this fish from every other species of *Sparus* at present known.

PLATE LXXIII.

The length of our specimen is two feet six inches: in the dorsal fin are eleven spiny rays and nine soft: the pectoral fin contains twelve rays: ventral five rays: anal ten rays, the three anterior ones of which are spinous: and tail nineteen.

PLATE LXVII.

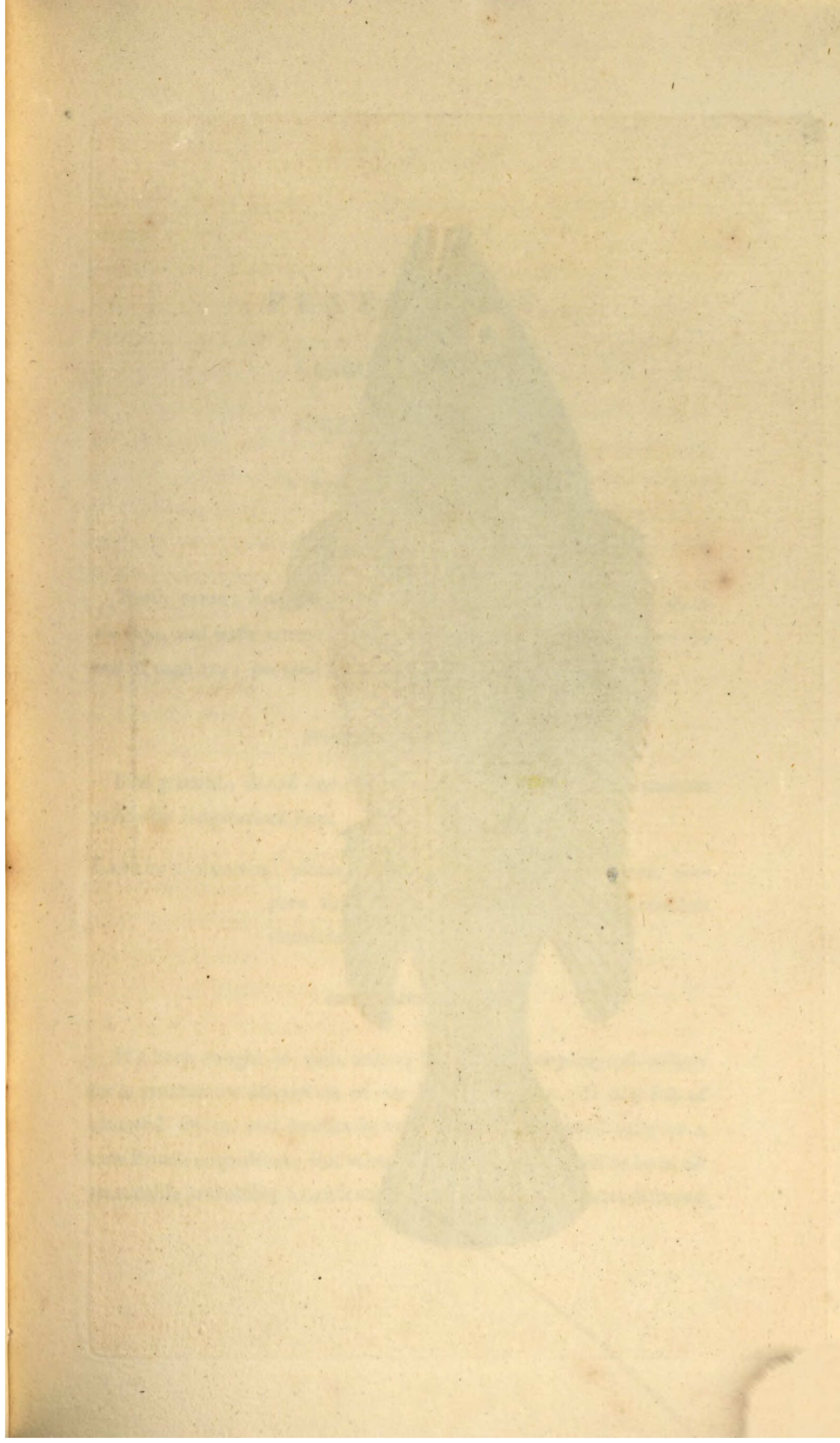




PLATE LXXIV.

LABRUS LINEATUS.

STREAKED WRASSE.

* PISCES THORACICI.

GENERIC CHARACTER.

Teeth acute : lips simple : branchiostegous membrane with about six rays, and scaly covers : dorsal fin, with a slender skin beyond the end of each ray : pectoral fin acuminated : lateral line straight.

SPECIFIC CHARACTER.

Fins greenish, dorsal one ramentous : body green, with numerous yellowish longitudinal lines.

LABRUS LINEATUS : pinnis viridescentibus dorsali ramentacea, corpore viridi lineis longitudinalibus flavescentibus numerosis.

We have sought in vain among the best Ichthyological writers for a satisfactory description of our Labrus lineatus. It is a fish of beautiful figure, and eminently interesting, if considered only as a new British acquisition ; but when it is further ascertained to be in all reasonable probability a nondescript species, we are still more disposed

P L A T E LXXIV.

to congratulate the reader and ourselves upon its discovery. At first it was imagined this might be the species *Labrus viridis* of Artedi, but which we are now persuaded it is not. Neither is it of the same kind as the Japanese fish called by Bloch *Labrus viridis*. If it be mentioned by any author it must be Pennant. We are not indeed entirely free from suspicion but that it really may be the *pale green Wrasse* alluded to by that author in his concluding observations on the genus *Labrus*, in his *British Zoology*, although the description left of that fish is confessedly too ambiguous to authorise any opinion. The passage in which we conjecture that it may be mentioned is as follows: "Besides these species," says our author, "we recollect seeing taken at the Giant's Causeway in Ireland, a most beautiful kind of a vivid green spotted with scarlet, and others at Bandooran in the county of Sligo of a *pale green*. We were at that time inattentive to this branch of natural history, and can only say they were of a species we have never since seen." This is the only instance in which the *pale green Wrasse* is mentioned in his work, so that nothing certain can be inferred from it.

Our *Labrus lineatus* is an occasional visitor, as we are credibly informed, to the coast of Cornwall, where it is provincially known by the name of *green-fish*: it usually appears in the summer, and is esteemed the rarest species of its tribe by the fishermen in those parts. The specimen now in our possession, and from which the figure in the accompanying plate is delineated, was taken on this coast a few years ago by Captain Bray. This specimen is seven inches long, and having been carefully divested of the flesh while perfectly fresh, and the skin well prepared, the natural colours of the fish are admirably well retained. Besides this genuine British specimen, we possess another in excellent preservation from the Mediterranean sea,

PLATE LXXIV.

that differs only in being smaller, and having the head, back, and sides of the body of a brighter green.

The dorsal fin in the Cornish specimen contains twenty bony rays and ten soft ones : pectoral fourteen : ventral eight : anal eleven : the first three of which are spinous ; and the tail fifteen.

PLATE XXIV.

1871
The following is a list of the
names of the persons who
were present at the
meeting of the
Board of Directors
of the
Company
held on the
1st day of
January, 1871.
The names of the
persons who were
present at the
meeting of the
Board of Directors
of the
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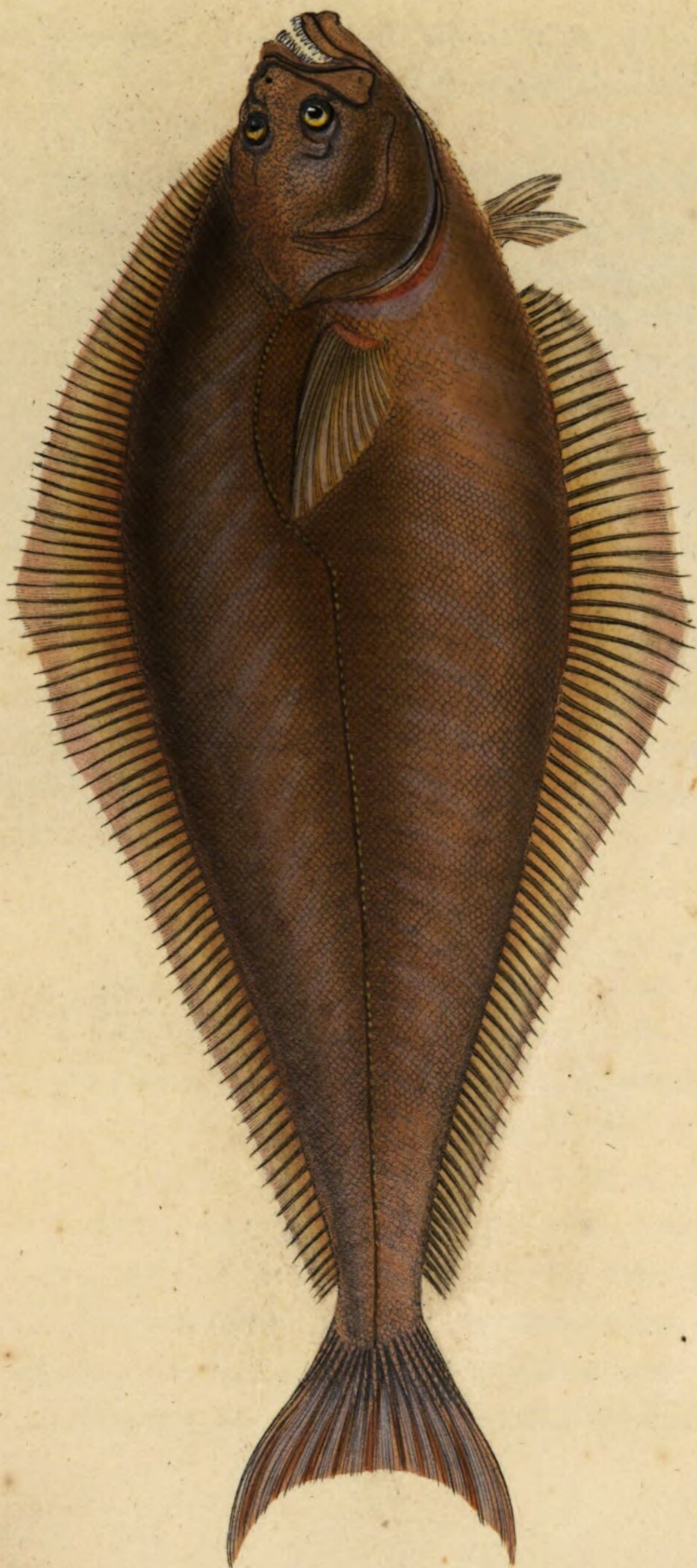


PLATE LXXV.

PLEURONECTES HIPPOGLOSSUS.

HOLIBUT.

* PISCES THORACICI.

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated : upper side sub-convex : beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body entirely smooth : caudal fin lunated.

PLEURONECTES HIPPOGLOSSUS : corpore toto glabro, pinna caudali lunulata.

PLEURONECTES HIPPOGLOSSUS corpore toto glabro. *Fn. Suec.*

329. *Gmel. Linn. Syst. Nat. T. 1. p. 3. 1227.*

sp. 4.

Pleuronectes oculis a dextra, totus glaber. Arted. gen. 17. syn. 31.

Pleuronectes pinna caudali lunulata. Bloch Fisch. Deutschl. 2.

p. 47. n. 6. t. 47.

HOLIBUT, *Penn. Brit. Zool. 3. p. 226.*

PLATE LXXV.

The Holibut is beyond comparison the largest of the *Pleuronectes* tribe: some say even of all aquatic animals with the exception only of the whale tribe, but to this we cannot give our entire assent; there are other monsters of the "vasty deep" that may vie in magnitude with the Holibut. This fish is commonly found of seventy, eighty, or one hundred pounds in weight: individuals of this size are not very unfrequent in the London markets in the spring, or early in the summer, at which time they quit the deep recesses of the ocean, and approach the shores, with the view of depositing their spawn in places of safety. We have seen them even of two hundred pounds weight, or more, at that season of the year, in the markets of our metropolis, where they obtain a ready sale among the lower orders of society at about the average price of six-pence or seven-pence per pound. The flesh is not held in very high estimation, being hard, dry, and of indifferent flavour; the head, and fatty part beneath the pectoral fin excepted. In Holland, where those fish are common, the head and shoulders are admitted to the tables of the great, but no other part. Some think the smaller ones, weighing from five, or six, to ten pounds, better than those of a larger size, but this is not a very general opinion.

Pennant speaks of the Holibut being caught in the British seas of considerable magnitude, namely, from one to three hundred weight. On the coast of Iceland, and other northern regions, it is said to grow much larger, or from four to five hundred pounds each;—what indeed must be the weight of that Holibut which Olafsen tells us he has seen, that measured five French ells in length!

These fish are very abundant in the North Seas. On the coast of Greenland the natives eat it fresh in summer, and prepare a large

PLATE LXXV.

quantity of it during that season as an article of their winter store of provisions by a very simple process, first cutting the fish into long slips of moderate thickness, and afterwards allowing them to dry gradually in the sun. Upon our coasts it does not appear to be a very common species except towards the southern parts of the kingdom. It is found on the western coasts we believe most frequently. We have received small specimens from Scotland, where it is also taken occasionally of a vast size. On the coast of Wales we are inclined to think it cannot be very common. The appearance of a Holibut some years ago in the straits of Menai, between the northern extremity of Caernarvonshire and the island of Anglesea, was considered as a very extraordinary incidence by the Rev. Hugh Davies, of Beaumaris, who informed us of the circumstance, in one of our visits to that country, and pointed out the spot on which it was stranded, not far distant from Portaethwy.

The Holibut is a voracious fish, but from its habits of prowling, and swimming near the bottom of the sea, or close under the shelter of rocks, subsists chiefly on the smaller kinds of flat fish, on crabs, lobsters, and other crustacea; and on the lump sucker, which latter they find abundantly common, attached under water to the rocks by means of their adhesive organ, or sucker. These are the chief objects of its prey. In its turn it has many enemies; when young, or in the egg state, the Holibut is the prey of all the various species of the ray tribe, as it is of the propesse and sharks when full grown. The Holibut is taken on the coast of Greenland, Iceland, and Norway, by means of strong hooks and lines, similar to those employed in the cod fisheries, but for the capture of the larger fishes the spear, or harpoon are generally used with most success.

PLATE LXXV.

The whole of the superior surface of this fish is perfectly smooth to the touch, the scales being small, and soft, and the body covered with a peculiar sort of mucous. Its colour is dusky brown, most commonly inclining to a liver colour, and free from spots: the tint of colour is variable, and it has been remarked that in proportion as the fish is in poor condition it becomes blackest, or more dusky: the lower surface is uniformly white. The Holibut is of a more elongated figure than almost any other fish of its genus, and tapers much towards the tail, the crescent form of which is a very distinguishing criterion of this species. The specimen now before us contains one hundred and one rays in the dorsal fin: pectoral fin fourteen: ventral fin five: anal fin seventy-three; and tail seventeen.

PLATE XXV

CYCLORHINUS

DESCRIPTIO

FORMA

CHARACTERES

Head small, round, in the anterior part
of the body, with a small, dark spot
on the forehead, and a single dark
spot on the side of the head.

CHARACTERES

Body small, round, with a small, dark spot
on the forehead, and a single dark spot
on the side of the head.

Cyclorhinus, a small, round, head, with a small, dark spot
on the forehead, and a single dark spot on the side of the head.

- Cyclorhinus*, *Genus*, pp. 111, 12, 13, 14, 15, 16, 17.
Cyclorhinus, *Genus*, pp. 111, 12, 13, 14, 15, 16, 17.
Cyclorhinus, *Genus*, pp. 111, 12, 13, 14, 15, 16, 17.
Cyclorhinus, *Genus*, pp. 111, 12, 13, 14, 15, 16, 17.

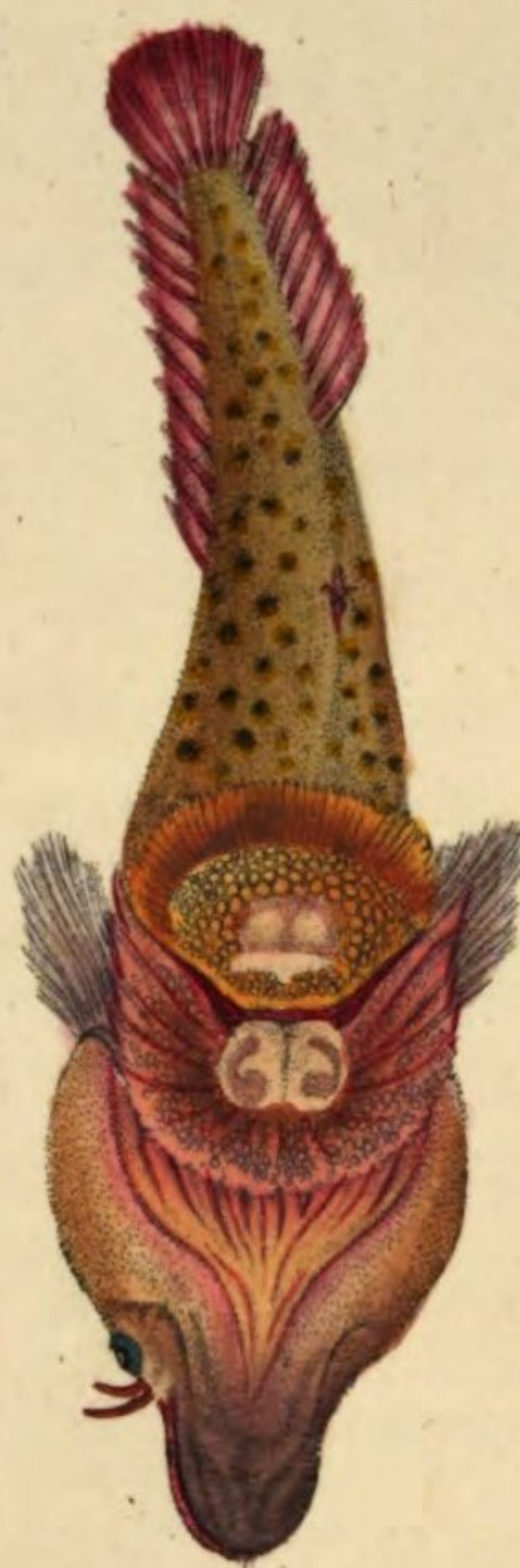


PLATE LXXVI.

CYCLOPTERUS OCELLATUS.

OCELLATED SUCKER.

* PISCES BRANCHIOSTEGI.

GENERIC CHARACTER.

Head obtuse, mouth in the anterior part: tongue short and thick, jaws furnished with numerous minute sharp teeth. Branchostegous membrane with four rays: cover of a single piece. Body short, thick, destitute of scales. Ventral fins connected: the sucker between them.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body naked, attenuated behind, and livid: snout projecting: tentacula four before the eyes; and two large ocellar spots on the hind part of the head.

CYCLOPTERUS LUMPUS: corpore nudo postice attenuato livida, fronte producto, tentaculis quatuor ante oculos, occipite maculis duabus magnis ocellaribus.

LEPADOGASTER, *Gouan. pisc.* 177. t. 1. f. 6. 7.

LESSER SUCKING-FISH. *Borlase Cornw.* 269. t. f. 28.

JURA SUCKER. *Pen. Brit. Zool. T.* 3. p. 137. n. 59.

CYCLOPTERUS LEPIDOGASTER, JURA SUCKER. *Turt. V.* 1. p. 907.

PLATE LXXVI.

CYCLOPTERUS CORNUBICUS, CORNISH SUCKER. *Shaw Gen.*

Zool. V. 5. p. 2. p. 397.

For the discovery of this curious species of Cyclopterus on the British coast we are indebted to Dr. Borlase: he found it on the coast of Cornwall, and described it under the name of the *Lesser Sucking-fish*, in his Natural History of that county. It was afterwards observed by Mr. Pennant, in his tour through Scotland, in the sound of Jura, and from this latter circumstance it is called the Jura Sucker in the British Zoology of that author. And since that time it has occurred upon other parts of the western coasts of England, besides Cornwall.

As we cannot but disapprove the changing of established names in the science of natural history, unless very cogent or sufficient reasons can be at the same time advanced in favour of the supposed emendation, we think Mr. Pennant not entirely free from blame in abolishing the name given to it by Borlase, and substituting that of the Jura Sucker. The alteration is very likely to mislead the inexperienced naturalist into a belief of the species being peculiar to the Sound of Jura; or at least that it was originally detected in that Sound, neither of which suggestions have the least foundation. Mr. Pennant knew that the same fish had been previously found in Cornwall by Dr. Borlase, and therefore if he had conceived the name of Lesser Sucking-fish inapplicable, it would have been certainly more consistent to term it the Cornish, than the Jura Sucker. Neither of those names are indeed in our mind admissable, because the characters of the fish itself affords one altogether expressive of the species, and which cannot easily be overlooked. Dr. Shaw seems conscious of an im-

PLATE LXXVI.

propriety in naming it the Jura Sucker, and therefore calls it the Cornish Sucker, (*Cyclopterus Cornubicus*,) in allusion to its original discovery on the coast of Cornwall: in every other particular Dr. Shaw has too implicitly acquiesced to the descriptive detail of Pennant, the substance of which it will not be improper to transcribe in this place previous to entering upon the history of this fish.

“ Its length is about four inches. The skin without scales, slippery, and of a dusky colour. The body taper. The nose grows slenderer from the head, and ends round.”

“ The teeth small. Before each eye is a small filament. Behind the eyes are two semilunar marks.

“ In the middle of the back an oval mark formed by small dots of a whitish colour. The dorsal fin lies near the tail, and consists of eleven rays. The tail is rounded. The ventral have four rays, are joined by an intervening membrane with an oval depression in the middle. Beyond that is another strong membrane with a similar depression. By means of these instruments it adheres to stones or rocks.” *Penn. Brit. Zool. v. 3. p. 137.*

Early in the month of February last, through the politeness of a very valuable correspondent, G. Montagu, Esq. of Kingsbridge, Devonshire, we were enabled to correct several errors in the above description. Mr. Montagu, before this time, had taken an opportunity of describing this as a plentiful species on the rocks of Milton on the coast of Devonshire, in an interesting miscellaneous paper inserted in the seventh volume of the Transactions of the Linnean Society of London: the observation induced us to request the favour

PLATE LXXVI.

of a few recent examples of the fish, and shortly after, in compliance with our wishes, Mr. Montagu obliged us with five specimens of it, the whole of which, as they were observed to differ in a few slight particulars from each other, it was thought might afford us a more adequate conception of this beautiful species than any solitary specimen. Among them were examples of the two sexes, and transitions of growth that are highly interesting. The whole arriving in excellent condition enabled us also to notice various circumstances that can only be observed in recent specimens.

The largest of those fishes was selected for representation, and of which, it is presumed, the figure which exhibits both the upper and lower surface will convey a far more correct idea than any general description we can subjoin. This, however, it should be observed, was of a lighter colour than the rest, and had also the spots on the body more distinct. The others were more dusky, or darker; and two of them inclining to purplish brown, with minute inconspicuous spots: the dorsal, anal, and caudal fins were also of a brighter purplish-red in the deeper coloured specimens than in that we have represented. Sometimes specimens occur that have the tail barred with white. The most striking peculiarities, however, of those fishes at the first view, was the perfectly ocellated appearance of the two large distinct spots on the posterior part of the hind head, which Mr. Pennant, and after him Dr. Shaw, denominate *semilunar marks*; and the four conspicuous erect cirri, two of which are situated before each eye, but which both those writers term a *single filament*. The ocellated spots are remarkable, and contribute much to the beauty, as well as singular appearance of the fish: each consists of a large obovate spot of a deep purple, inclosed within a broad pale brownish ring, and embellished in the center with a brilliant blue dot, or pupil. Generally

PLATE LXXVI.

speaking, those spots become obscure soon after the fish dies; in others, they remain for two, three, or four days, nearly as distinctly visible as in the living fish. We have specimens even that have been immersed for months in spirit of wine, in which those spots, though faint, may be observed, if attentively examined.

The four cirri before the eyes are of a fine red colour, they are erect, or slightly bending backwards, and two are rather shorter than the others: those cirri are disposed in pairs, a longer and shorter one being situated before each eye; at the base they are connected, but from thence they rise separately, and are perfectly distinct. How Pennant could have mistaken those cirri, so far as it appears he has done, is unaccountable: indeed his figures seem to be at variance with his description, as though his artist had observed two filaments before each eye in the very specimen represented, instead of one, as Pennant describes it: there is certainly a slight appearance at least, of two filaments before each eye, in both the figures of the Jura Sucker given in the British Zoology.

Gmelin omits this species of *Cyclopterus* in his edition of the Linnaean *Systema Naturæ*. Turton, in his translation of that work, supplies the omission, describing it as *Cyclopterus Lepidogaster*, or Jura Sucker: his specific character, however, being taken from Pennant, is erroneous in the last mentioned particular, for he speaks of a single filament before each eye as a principal criterion of the species, but which, it appears from the above particulars, is not correct; neither is the snout of this fish truncated as that author describes.

The general appearance of this species is sufficiently explained by the figure accompanying this description. The dorsal fin in our

PLATE LXXVI.

largest specimen contains eleven rays: pectoral fin seventeen: anal ten: and tail six. The dorsal and anal fin are connected by a short membrane to the base of the tail.

This species is found abundant on the rocks at Milton, on the Devonshire coast, as before observed, where it can only be obtained at low water, as it is never taken in the dredge.

PLATE 123

CYPRUS

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+ PAPHOS

1. PAPHOS

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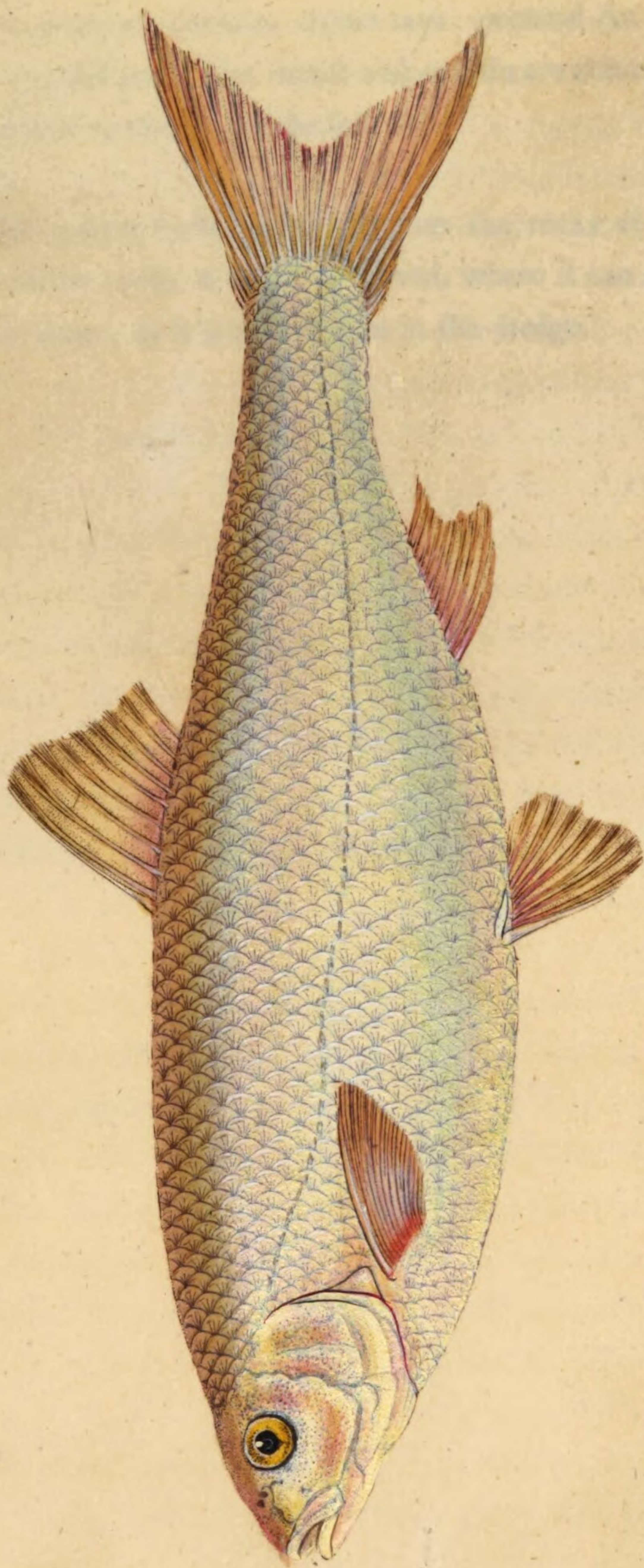


PLATE LXXVII.

CYPRINUS LEUCISCUS.

DACE.

* PISCES ABDOMINALES.

GENERIC CHARACTER.

Mouth small and without teeth: gill membrane with three rays: body smooth, and whitish in general: ventral fins usually with nine rays.

SPECIFIC CHARACTER

AND

SYNONYMS.

Anal fin with eleven rays: dorsal fin ten.

CYPRINUS LEUCISCUS: pinna ani radiis 11, et 10 in pinna dorsali.

*Bloch, Fisch. Deutschl. 3. p. 141. n. 28. t. 97.
f. 1.*

CYPRINUS LEUCISCUS: pinna ani radiis 10, dorsali 9. *Gmel. Linn.*

Syst. Nat. 1424. sp. 12.

Cyprinus novem digitorum, ritulo longior et angustior, pinna ani radiorum decem. *Art. syn. 9.*

Leuciscus fluviatilis secundus. *Gesn. aq. p. 26. ic. anim. p. 290.*

VANDOISE, or DARD. *Belon, Bloch, &c.*

DACE, or Dare. *Will. ichth. p. 260. Ray, pisc. p. 121. Penn.
Brit. Zool. V. 3. p. 366.*

PLATE LXXVII.

The Dace delights in clear streams, or in deep and still rivers, where it subsists chiefly on worms. In summer it is remarkable lively, and is frequently observed sporting near the surface of the water. The Dace is the prey of all the larger and more voracious fishes that inhabit fresh waters; but the perch and jack are its greatest enemies. This is a prolific fish, multiplying prodigiously: the spawning time is in June, when it deposits its eggs at the roots of aquatic plants, under stones, or in the gravelly beds of rivers. Although the flesh of the Dace is palatable and wholesome, it is held in very little esteem.

The ordinary size of this fish seldom exceeds four, five, or six inches, those of eight or ten inches are uncommon. In France they are sometimes found a foot in length; and Bloch informs us, it has been taken in England eighteen inches in length, but on what authority we are not informed. Pennant speaks of one that weighed a pound and a half. The largest we have seen were caught in the river Thames, and did not exceed the length of twelve inches.

This elegant species of *Cyprinus* appears abundantly common in the early part of the summer in many of the English rivers. We suspect it to be less plentiful on the Continent than with us, except in France, and the southern parts of Germany. It occurs also in Siberia.

In our specimen the pectoral fin contains eighteen rays: ventral nine rays: and tail twenty-two rays.



*

PLATE LXXVIII.

CYCLOPTERUS BIMACULATUS.

BIMACULATED SUCKER.

* PISCES BRANCHIOSTEGI.

GENERIC CHARACTER.

Head obtuse, mouth in the anterior part: tongue short and thick, jaws furnished with numerous minute sharp teeth. Branchostegous membrane with four rays: cover of a single piece. Body short, thick, destitute of scales. Ventral fins connected: the sucker between them.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body naked, attenuated behind, and rosy; with a purple spot surrounded by a white ring on each side of the abdomen.

CYCLOPTERUS BIMACULATUS: corpore nudo postice attenuato roseus; macula ventrali utrinque violacea albocincta.

BIMACULATED SUCKER. *Penn. Brit. Zool. Append. v. 3. n. 397. t. 22.—Montagu, in Linn. Trans. Soc. v. 7. p. 293.*

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This species of Sucker is of a small, or rather diminutive size, but will not be considered uninteresting either in point of beauty or rarity. Whether it has ever been discovered on any other than the British coasts, admits of doubt; a variety of circumstances incline us to believe it has certainly not. Among the continental naturalists, it appears to be noticed only by those of France; and we may infer, from the tenor of their observations, that they are indebted to our countryman Pennant for every particular respecting it*. The species escaped the researches of the indefatigable Bloch, and it is also omitted in the Gmelinian edition of the *Systema Naturæ*.

The first account given of this *Cyclopterus* is to be found in the Appendix of Pennant's *British Zoology*; who informs the reader, her Grace the Duchess Dowager of Portland did him the honour of communicating it. He describes it as having "the head flat and tumid on each side: the body taper: the pectoral fins placed unusually high. It has only one dorsal fin; placed low, or near the tail. The tail is even at the end. The colour of the head and body is of a fine pink: of the fins, whitish. On each side of the engine of adherence on the belly, is a round black spot. Found near Weymouth."—It may not be improper to add, that the specific character assigned to the bimaculated Sucker, by Dr. Turton †, and

* " *Le Cycloptère bimaculé* a les nageoires pectorales situées vers le derrière de la tête, et une tache noire sur chaque côté du corps. Il vit dans les mers d'Angleterre." Bosc, &c.

† " *Cyclopterus bimaculatus*, *Bimaculated Sucker*. Head flat, tumid each side, tapering to a point; pectoral fins placed near the nape, &c." Turt. Trans. Linn. Syst.

PLATE LXXVIII.

the general account by Dr. Shaw*, accord in every respect, except a slight variation of language, with the above description.

A far more copious and satisfactory account of this elegant species appeared last year, in a paper written by G. Montagu, Esq., of Knowle, in Devonshire, and inserted in the seventh volume of the Transactions of the Linnæan Society. Mr. Montagu informs us, he has frequently taken this species, by deep dredging, at Torcross, in Devonshire, adhering to stones and old shells, and has kept several alive for a day or two, in a glass of sea water. The first specimen of this fish we possessed, was taken on that coast by Mr. Montagu, and communicated to us in spirits, with an accurate description of its appearance while living. We have since found one specimen of it ourselves, affixed by its sucker to the shell of an oyster, in dredging on the coast of Kent, near the Nore.

It appears, both from the observations of Mr. Montagu, who has had frequent opportunities of examining this fish, and from the solitary individual we have found, that Mr. Pennant was mistaken as to one very striking and, indeed, decisive character of this species: the black abdominal spots, as he terms them, but which, in the recent fish, are purple; those purple spots are encircled with a narrow ring of white, which contributes much to the elegance of the fish, and forms a striking characteristic of the species.

* "*Cyclopterus Bimaculatus*. *C. roseus*, macula utrinque ventrali nigra, &c." Shaw.
Gen. Zool. v. 5. p. 2. p. 398.

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The general tint of this fish is a delicate rose colour, or pink, very prettily speckled with extremely minute dots of white. The irides are pink, with an inner golden circle, and blue pupil; and the fins are variegated, or barred with reddish. This beautiful creature is said to exceed, though rarely, an inch and a half in length. The upper figures in our plate exhibit the fish much above the natural size of our largest specimen, to afford an opportunity of delineating it with more correctness than could conveniently be accomplished within a smaller compass. The dorsal fin, which is placed far behind, contains five rays: pectoral, eleven apparent rays: ventral four: anal five: and caudal twelve.



PLATE LXXIX.

BLENNIUS PHOLIS.

SMOOTH BLENNY.

* PISCES JUGULARES.

GENERIC CHARACTER.

Head sloping : six rays in the gill-membrane : body lanceolate :
ventral fins of two united rays : anal fin distinct.

* Section. *Head not crested.*

SPECIFIC CHARACTER

AND

SYNONYMS.

Lateral line curved, and somewhat bifid : nostrils tubular, and
fimbriated.

BLENNIUS PHOLIS : linea laterali curvata sub-bifida ; naribus tubu-
losis fimbriatisque.

BLENNIUS PHOLIS : linea laterali sub-bifida. *Linn. Mus. Ad.*
Fr. 2. p. 62.—Gmel. Linn. Syst. Nat. 1180.
sp. 8.

Blennius capite summo acuminato, maxilla superiore longiore. *Art.*
gen. 27. syn. 45, et 116

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BLENNIUS PHOLIS: naribus tubulosis fimbriatisque. *Bloch. Fisch. Deutschl.* 2. p. 184. n. 1. t. 71. f. 2.

Mulgranoc et Bulcard *Cornubiæ Will. Ichth.* p. 133. t. h. 6. fig. 2. 4.—*Raii syn. pisc.* 73.

Cataphractus lævis *Cornubiensis*, Smooth Shan. *Jago apud Raii syn. pisc.* 164. fig. 10.

SMOOTE BLENNY. *Penn. Brit. Zool. T.* 3. p. 208. 92.

The Smooth Blenny is a very local fish. Willughby, Ray, and Jago, speak of it as a species inhabiting the coast of Cornwall, where we are informed it is still observed occasionally, but is considered as a rare fish. Pennant mentions finding this fish on the coast of Anglesea as a remarkable incident, presuming most probably that it had not been noticed before on any other of the British coasts than that of Cornwall. "We discovered (says Mr. Pennant) this species in plenty, lying under the stones among the tang, on the rocky coasts of Anglesea, at the low water-mark. It was very active and vivacious, and would, by the help of its ventral fins, creep up between the stones with great facility. It bit extremely hard, and would hang to ones finger for a considerable time. It was very tenacious of life, and would live for near a day out of water." The exact situation in which Mr. Pennant found the Smooth Blenny in such plenty, lies on the south side of the island, extending from the town of Beaumaris, along the skirts of Beaumaris bay, in a westerly direction through the straits of Menai to Bangor ferry, or Plas Newydd. This is not stated by Mr. Pennant himself, but was kindly communicated to us by the Rev. Hugh Davies, of Aber, who assisted that writer in collecting materials

PLATE LXXIX.

for his British Zoology. The time to which Mr. Pennant alludes, in which the Smooth Blenny was so abundant on this coast, is now above thirty years ago; and we may venture to affirm, on the assurance of Mr. Davies, and from our own repeated observation, that it is no longer an inhabitant of that part of the coast of Anglesea. The importance of the article tang, in which this species, and a variety of other littoral fishes, were known to secrete themselves, was then unknown: its utility in making glass, and other useful arts, has been since discovered; and for the last ten or fifteen years, the tang has been so frequently gathered by the landholders, for those purposes, that the broods of those fishes are now destroyed. The same reason may be assigned, most probably, for the rarity of the Smooth Blenny on the Cornish coast at this time.

In a recent tour round the maritime parts of the island of Anglesea, we ascertained one satisfactory point, to the surprise of Mr. Davies, namely, that the Smooth Blenny still inhabits the shore of a small rocky extremity on the north-west side of the island. We discovered it among the recesses of the shelving rocks, close to the low-water mark, in a situation nearly opposite to the Skerry Islands. In this spot we met with several specimens of various sizes, and had an opportunity of observing that, in their natural state, it is almost impossible to find two fishes alike in their colours and variegations. Some were dark brown speckled, and spotted with black, and whitish; the irides of the eye a bright scarlet, and fins deep orange; others olivaceous clouded with grey, and some blackish variously mottled. The most elegant among them is that selected for our figure, the prevailing colour of which was a fine green, very beautifully marked with irregular and some-

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what transverse marks of silvery white, changeable to yellowish; the belly silvery, and fins orange spotted with greenish. One peculiarity in those fishes we could not avoid observing; throughout all the varieties, though so strikingly dissimilar, in other respects the eyes were scarlet, the lips white, or slightly tinged with reddish, and the extremity of every ray in the anal fin perfectly white. The posterior nostrils in all the specimens were tubular and fringed with small fibres, or ciliations, as Bloch observes, and which appears to be one of the most invariable characters of the species, though it was not so greatly protruded in any of the specimens we examined as the drawing of his fish represents. The teeth are of a slender form, long, and set remarkably close and even. Those fishes are so tenacious of life, that several of them lived more than thirty hours out of the sea. They subsist on small crabs, testaceous vermes, and other worms.—We also discovered this local species of *Blennius* on the coast of Pembroke-shire*.

The general size of this fish varies from three, to four, or five inches. The dorsal fin, which extends from the nape close to the tail, is nearly divided into two parts, and contains in our selected specimen thirty-one rays: the pectoral fin twelve rays; ventral two; anal twenty: and caudal thirteen.

* Vide *Donov. Tour South Wales*, A. D. 1804.

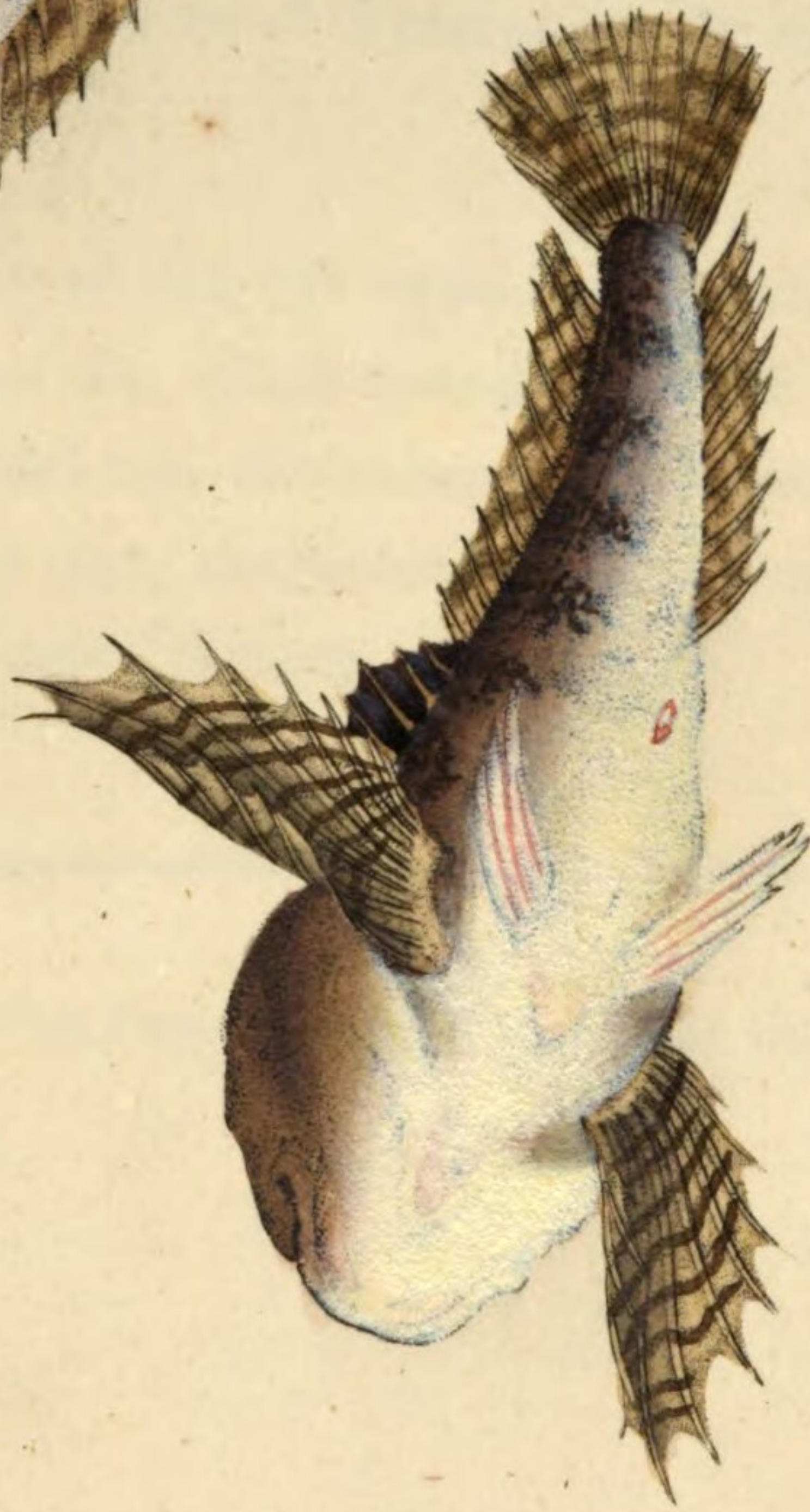


PLATE LXXX.

COTTUS GOBIO.

RIVER BULL HEAD.

* PISCES THORACICI.

GENERIC CHARACTER.

Head broader than the body, and spinous: eyes vertical, and furnished with a nictitant membrane: six rays in the gill membrane: body round, without scales, and tapering towards the tail; one or more dorsal fin.

SPECIFIC CHARACTER

AND

SYNONYMS.

Smooth: body tapering: head broad: gill covers armed with two spines each.

COTTUS GOBIO: lævis, corpore attenuato; capite lato, operculis bispinosis.

COTTUS GOBIO: spinis curvatis duabus ad utrumque operculum.
Bloch. Fisch. Deutschl. 2. p. 12. n. 1. t. 38. fig. 1. 2.

COTTUS GOBIO: lævis, capite spinis duabus. *Müll. prodr. Zool. Dan. p. 44. n. 368.*

COTTUS GOBIO. *Linn. Fn. Suec. 322.*

Cottus alepidotus glaber capite diacantho. *Art. Gen. 48. syn. 76. spec. 82.*

Gobius fluviatilis alter. *Bel. aq. p. 321.*

Bull-head, Miller's Thumb. *Will. Ichth. 137.—Raii syn. pisc. 76.*

RIVER BULL-HEAD. *Pen. Brit. Zool. v. 3. p. 216. sp. 97.*

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The ordinary size of this fish is from three to four, or rarely five inches. In the northern parts of Europe, and in Siberia, it sometimes attains to the length of half a foot, or even seven inches; which latter appears to be the utmost size of any individual of this species hitherto discovered.

This fish inhabits most fresh water streams and rivers, where it is commonly observed lying at the bottom, lurking upon the gravel, or among stones, beneath which it oftentimes secretes itself when closely pursued by other voracious fishes. The spawning season is in March and April. It has been affirmed, though certainly without probability, or sufficient authority, that the female deposits her eggs in holes, which she purposely forms for their reception, and that she will not quit the spot even at the peril of her life. Marsigli asserts that the female rests for the space of a month on the eggs. This species subsists chiefly on aquatic insects, and the eggs or fry of other fishes.

The prevailing colours are nearly the same in all the individuals of this species, namely, a livid brown, more or less speckled with yellow, and spotted with dusky or black, the belly silvery white, and fins varied with brown. The anterior dorsal fin is of a darker colour than the others, and is sometimes edged with white, or whitish; this fin, in the largest specimen delineated in our plate, contains eight rays: the second dorsal fin, seventeen: pectoral fin, eleven: ventral four: and the anal and caudal fins, twelve each.



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PLATE LXXXI.

PETROMYZON MARINUS.

MARINE, OR SPOTTED LAMPREY.

* PISCES CHONDROPTERYGII.

GENERIC CHARACTER.

Head more slender than the body. Mouth longer above than beneath: teeth orange, hollow within, and surrounded by a fleshy margin. Spiracles seven on each side the neck. A fistulous aperture on the nape. Without pectoral, or ventral fins.

SPECIFIC CHARACTER

AND

SYNONYMS.

Mouth papillous within: second dorsal fin distinct from the tail.

PETROMYZON MARINUS: ore intus papilloso, pinna dorsali posteriore a cauda distincta. *Linn. Fn. Suec.* 292.

Gmel. Linn. Syst. Nat. 1513. 129. sp. 1.

PETROMYZON MARINUS, ordinibus dentium pluribus. *Bloch Fisch. Deutschl.* 3. p. 38. n. 1. t. 87.

Petromyzon maculosus, ordinibus dentium circiter viginti. *Art. gen.* 64. syn. 90.

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Lampreda marina. *Gesn. paralip. p. 22.*

LAMPREY, or LAMPREY EEL. *Will. Ichth. p. 105.*

Raii Pisc. 35.

Pen. Brit. Zool. v. 3. p. 76. sp. 27.

The spotted Lamprey is a marine fish, ascending the larger rivers only early in the spring to spawn, and returning again to the sea after an absence of three or four months. It is a general inhabitant of all the northern seas of Europe; and is found in most of the principal continental rivers in March and April. The spotted Lamprey is apparently less abundant in the British than the north seas. We have some reason to believe, with Pennant, that it is more common in the vicinity of the Severn than in most other of our rivers, or perhaps with the exception of certain rivers in Scotland and Ireland. In the river Usk, a few miles from its junction with the Bristol channel, we know this fish to be occasionally taken of a large size, and in some plenty. A specimen of about two feet long, that was caught last spring at the entrance of the Thames, is now in our possession, but we cannot learn that it ever ascends this river to spawn.

Authors speak of the spotted Lamprey as a very prolific fish. The usual size is from eighteen inches to two feet, and sometimes three, which last it may be presumed very rarely to exceed. Bosc, a French writer of the present day, indeed asserts, that this fish grows to the enormous length of six or eight feet, and is then about four inches in diameter; but on what authority this assertion is advanced, is not mentioned. The strong adhesive power which

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the mouth of this fish possesses is astonishing : it has been ascertained by experiment, that when once it has securely affixed itself by the mouth to a stone, or other heavy body, it will retain its hold for a considerable space of time, even when lifted up by the tail with the object twice or thrice its own weight suspended to it by this means. This tenacious property must afford the animal a powerful and almost invincible advantage in seizing upon its prey. Independently of this, it is a fish endowed with much strength, and remarkable for its activity both in the water, and on the shore, where it occasionally prowls in search of worms, and other objects of food. The colour of this species appears to vary materially at various seasons, and at different periods of growth : the specimen from which our figure is copied was of a bright green, tinged with blue, yellow, and reddish, and marbled in an elegant manner with black ; and those colours, the green especially, prevailed so strongly as to be retained in the specimen after remaining some months in spirits. Other Lampreys have been seen of a blueish colour, spotted with black ; olivaceous, with spots of a dusky hue ; or pale and reddish, marbled with chesnut, instead of black.

The flesh of the Lamprey is esteemed delicious by many : those of a middle size are however most admired for the table, being of a milder flavour, and less fat than those of a large size. In early times this fish was held in high repute in this country as a luxurious article of food, constantly appearing at the splendid banquets of the great. The partiality of Henry I. King of England, to this favourite dish appears, upon the testimony of the best historians, to have been the occasion of his death. Mr. Pennant speaks of it as an ancient custom for the City of Gloucester annually to present his Majesty

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with a Lamprey-pye, covered with a large raised crust ; and further observes, as the gift is made at Christmas, it is with great difficulty the Corporation can procure any fresh Lampreys at that time, though they give a guinea a-piece for them so early in the season. The Lamprey potted is admired as a delicacy by our modern epicures. Bloch mentions another mode of curing this fish, as practised in some of the fishing towns in the north of Germany, in the neighbourhood of which they take the Lamprey in the greatest plenty : the fishermen cut the fish into pieces, and, after broiling it, pack it in barrels, with a pickle of vinegar and spices*, and transport it as an article of trade to the interior of the Continent, where this fish is scarcely ever taken, or is entirely unknown. The Lamprey is in the highest season in the spring ; the flesh becomes flabby in the summer, after it has remained long in the fresh waters, and is not then considered very wholesome.

* Sometimes they pickle it in a liquor composed of vinegar, salt, and pepper, with an infusion of thyme, and a little bay-leaf, which will preserve the fish for months, if kept in a cold situation.



PLATE LXXXII.

SQUALUS ACANTHIAS.

PICKED SHARK, or DOG FISH.

• *PISCES CHONDROPTERYGII.*

GENERIC CHARACTER.

Head obtuse. Spiracles from four to seven, placed on the side of the neck, and semilunar. Eyes oblong, vertical, half covered, and situated before the temporal orifices. Mouth beneath, in the anterior part of the head: teeth numerous, serrated, acute, partly moveable: partly fixed; and unequal. Body oblong, roundish, and rough, with tender prickles. Ventral fins for the most part smaller than the pectoral, approximate, and situated round the vent, or genitalia, in the males.

• Section. *With temporal orifices, and no anal fin.*

SPECIFIC CHARACTER

AND

SYNONYMS.

Fuscous-grey, beneath white: body roundish: two dorsal fins with an anterior spine each.

SQUALUS ACANTHIAS: fusco-cinereis, subtus albus: corpore tere-
tiusculo, pinnis binis dorsalibus antice unispinosis.

SQUALUS ACANTHIAS: pinnis dorsalibus spinosis, corpore subtus
albus.

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SQUALUS ACANTHIAS: pinnis dorsalibus spinosis, corpore teretiusculo. *Linn. Fn. Suec.* 295.—*Mus. Ad. Fr.* 1. p. 53.—*Ib. Wgoth.* 174. *Gmel. Linn. Syst. Nat.* p. 1500. sp. 1.

SQUALUS ACANTHIAS corpore teretiusculo, dorso biaculeato. *Bloch. Fish. Deutschl.* 3. p. 74. n. 1. t. 85.

Galeus Acanthias sive spinax. *Rondel.* 373.

Will. Ichth. 56.

Raii. Pisc. p. 21.

Aiguillat. Brousson. Act. Par. 1780.

PICKED-BACK SHARK. *Penn. Brit. Zool.* v. 3. p. 100. sp. 40.

The picked Shark, or Dog-Fish, seldom grows to the length of more than three or four feet; the larger ones usually weighing, at the utmost, about twenty pounds. The prey of this voracious animal consists principally of Herrings, Mackrel, and other fish that visit our shores in their periodical migrations from the north seas, and which the picked Dog-Fish pursues in immense bodies, following close in the rear of the shoals. This species is far more abundant in the northern than southern parts of Europe: it appears in the Baltic only rarely; on the coast of Greenland, Iceland, and the north of Scotland, it infests the seas, and shores in swarms. The flesh of this species is esteemed more delicate, and palatable, than the rest of the shark tribe; and being taken in the greatest abundance by the Scotch fishermen, constitutes an article of food among the lower orders, who either eat it fresh, or cure it for exportation. The Icelanders, as well as the Scotch, prepare a vast quantity of this fish by splitting it, and ex-

PLATE LXXXII.

posing it in the air to dry: "it forms (says Mr. Pennant) a sort of internal commerce on the coasts of Scotland, being carried, on women's backs, fourteen or sixteen miles up the country, and sold or exchanged for necessaries. In some of the northern countries the natives extract an oil from this fish."

The present species is principally distinguished from the rest of the Shark tribe, by the strong bony spine situated before each of the two dorsal fins. This is not, however, sufficient to distinguish it from every other species of Shark, the Linnæan *Squalus Spinax* possessing the same character. Those two analogous species, though so closely allied to each other, may be readily ascertained by the colour of the belly, which in our species is perfectly white, in *S. Spinax*, dusky or black. Gmelin considers as a variety of *Squalus Acanthias*, the fish described by Molina in his History of Chili, a kind of Shark similar to ours, but having the body marked with ocellated spots. We are not perfectly clear as to this being a variety only, suspecting rather that it must be a distinct species, in which case there would be three kinds of *Squalus*, known by having both dorsal fins armed anteriorly with a single spine each.

Writers mention that the Danish and Norwegian fishermen regard the spines of *Squalus Acanthias* as poisonous, and are therefore extremely cautious in its capture. It has been stated by Bloch, that those spines appear already formed in the young Shark before it is excluded from the egg, only that they are not then so hard as in the full grown animals. Two small specimens that have lately occurred to our observation seem, however, to prove, that this is not precisely the fact. These were each about five inches long,

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and in both those fishes the dorsal spines, though observable, were by no means completely formed: they were only visibly protruded just above the skin at the base of the anterior part of the dorsal fins, while in the full grown animal they were conspicuously erect, and nearly the full length of the fin. This fish is said to couple in September.

The present species is principally distinguished from the rest of the Shark tribe, by the strong bony spine situated before each of the two dorsal fins. This is not, however, sufficient to distinguish it from every other species of Shark, the Lion-man Spinus Spinarum possessing the same character. These two analogous species, though so closely allied to each other, may be readily ascertained by the colour of the belly, which in our species is perfectly white, in *S. Spinarum*, dusky or black. Gmelin considers as a variety of *S. Spinarum* the fish described by Bloch in his *Hist. Nat. Ichth.* of China, a *Shark* similar to ours, but having the body marked with oblong spots. We are not perfectly clear as to this being a variety only, supposing rather that it must be a distinct species, in which case there would be three kinds of *Spinus*, known by having both dorsal fins armed anteriorly with a single spine each, and in *S. Spinarum* and *S. Spinarum* by having only one spine on each side of the body. Writers mention that the *Spinus* and Norwegian fishermen regard the spine of *Spinus* *Acanthus* as poisonous, and the Chinese extremely cautions in its capture. It has been stated by Bloch, that those spines appear already formed in the young *Shark* before it is excluded from the egg, only that they are not then so hard as in the full grown animal. Two small specimens that have lately occurred to my observation seem, however, to prove that this is not precisely the fact. These were each about five inches long.

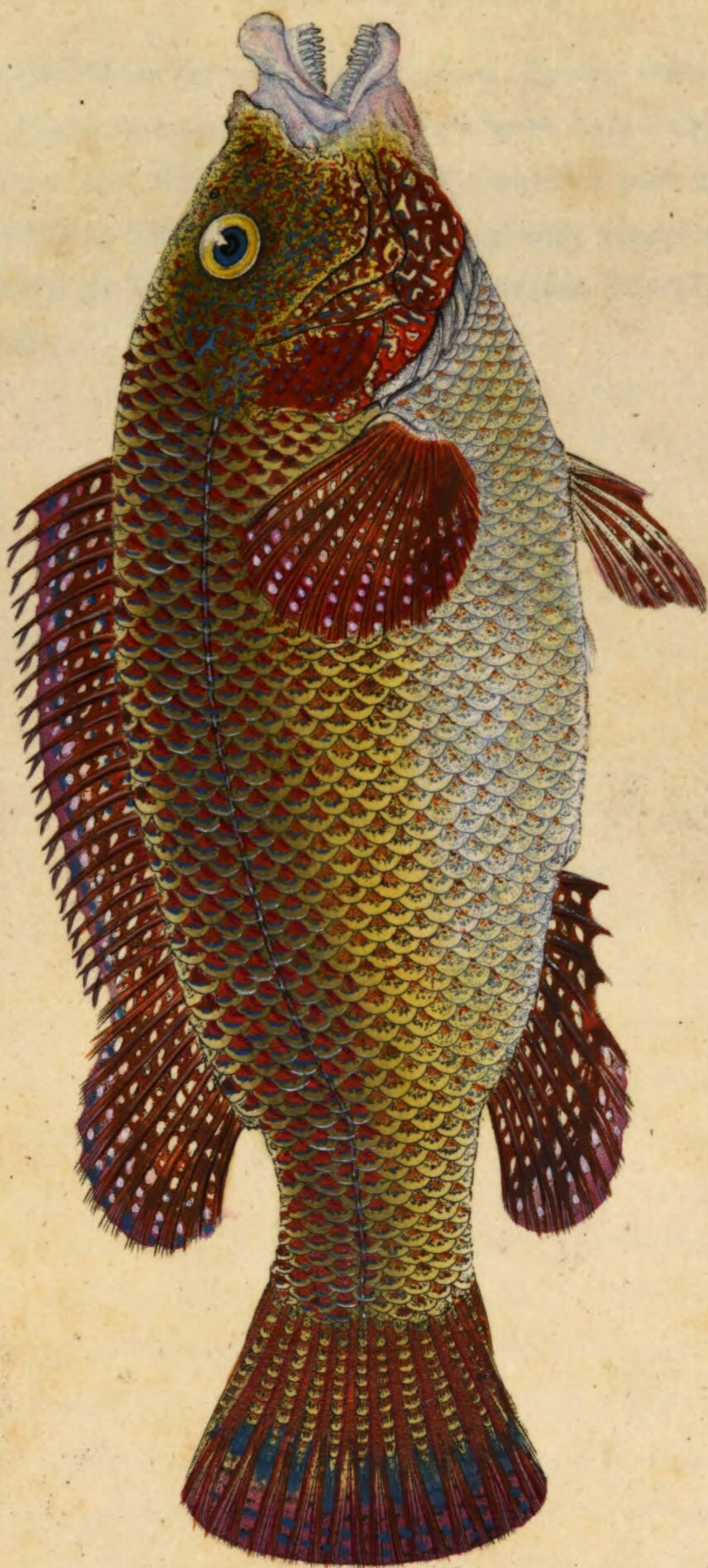


PLATE LXXXIII.

LABRUS TINCA.

ANCIENT WRASSE, or OLD WIFE.

* *PISCES THORACICI.*

GENERIC CHARACTER.

Teeth acute: lips simple: branchiostegous membrane with about six rays, and scaly covers: dorsal fin with a slender skin beyond the end of each ray: pectoral fin acuminate: lateral line straight.

SPECIFIC CHARACTER

AND

SYNONYMS.

Dorsal fin ramentaceous: body yellowish, variegated with blue and spots of red: fins red with fuscous margins, and dotted with white.

LABRUS TINCA: pinna dorsali ramentacea, corpore flavescente cœruleo variegato rubroque maculato, pinnis rubris fusco marginatis albo-guttatis.

LABRUS TINCA: rostro sursum reflexo, cauda in extremo circulari.

Art. Gen. 33. syn. 56.

LABRUS VETULA. *Bloch. 293.*

TURDUS VULGATISSIMUS. *Will. Ichth. 319.*

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Vieille, Poule de Mer, Gallot. *Belon*.

WRASSE, or OLD WIFE. *Raii syn. pisc.* 136.

Penn. Brit. Zool. v. 3. p. 244. 115.

This charming species of Wrasse cannot but be considered as one of the most beautiful of the fish tribe observed to this time on the coasts of Britain: it is distinguished in general by a peculiar richness of colouring, and such a happy diversity of spots and markings, as we rarely see excelled in the more splendid productions of hotter climates; and, with the exception of a very few species, stands wholly unrivalled in this particular among the fishes of this country.

We have obtained this species from Scarborough, and other Eastern coasts of England, more than once: we have received it also from Cornwall; from the Skerry islands, north of Anglesea; and from Scotland; but have been uniformly led to believe it a species not very common on either of those coasts, except near Scarborough. The specimen chosen for our figure is from Cornwall, this exhibiting a greater variety of brilliant colours than either of the others. The usual length of this species is about fifteen or eighteen inches, and its form rather bulky in proportion to its length. The prevailing colour is yellowish, inclining to greenish or olivaceous on the back, and white towards the belly: the markings variable in form, and differing much in colour. The whole of the back and sides are spotted with red, varying in different specimens from a deep or purplish crimson to a reddish orange; and even in some varieties almost to fulvous, and curiously marked with irregular lines, dots, and specklings of cœrulean blue, especially

PLATE LXXXIII.

about the head: the fins are red, with a broad dusky border inclining more or less to purple, and elegantly marked with numerous roundish dots of white.—Bloch considers the dusky border of the fins (which in the specimen he delineates is black) as a sufficient indication of the species. In his fish the black border was distinct only in the ventral, anal, and caudal fins; to which may be added that the dorsal fin is commonly dusky or purplish as well as those before mentioned. The number of rays is variable; the dorsal fin in our Cornish specimen contained twenty spiny rays and ten soft ones: pectoral fin fourteen soft rays: ventral one spiny and five soft rays: anal three spinous and nine soft rays, and the tail fourteen rays, all which are soft.

Bloch describes this fish under the title of *Labrus vetula*, as a native of the coasts of Brittany, Normandy, and the North Sea, from the last of which he received it through the medium of his friend M. Spengler. Gmelin mentions it as an inhabitant of the British coasts, probably on the authority of Ray and Willughby. But the species is not confined to Europe, a specimen of it taken among a variety of other fishes by Capt. Cook in the South Seas is at this time in our possession.

The haunts of this fish are deep waters on the boldest rocky shores, where it subsists chiefly on crabs and testaceous animals, for the maceration of which the three tuberculated bony processes of its throat are admirably constructed. This fish takes bait eagerly, and is more commonly caught with the hook and line, than in the net, or by any other mode of capture.

It appears Mr. Pennant had not considered the varieties of this fish attentively, or we think the Ballan wrasse would not have been de-

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scribed as a species distinct from *Labrus tinca*. The Ballan wrasse of that writer, is certainly the same as our fish, from which it differs only in being of a paler colour, and in having the body marked with yellowish, instead of orange, or red. Such pale coloured varieties occur pretty frequently, and are indeed more common than those of deeper, or more lively colours. Dr. Turton suspects the Ballan wrasse to be a variety only of the *Labrus tinca* of Linnæus, though he describes it as a species with this distinctive character: "body yellow spotted with orange: above the nose a deep sulcus: farther gill-cover with a deep depression radiated from the center." In those particulars, Dr. Turton was misled by the account given by Mr. Pennant, without reflecting that the same characters apply precisely to *Labrus tinca*. Mr. Pennant informs us, his Ballan "was the form of the common wrasse, only between the dorsal fin and tail was a considerable sinking: above the nose was a deep sulcus: on the farthest cover of the gills was a depression radiated from the center." It is already shewn that the spots on this fish vary considerably, to which may be added that the sinking between the dorsal fin and tail is conspicuous in all the varieties of *Labrus tinca*, and so also is the sulcus above the nose. With regard to the last characteristic the radiated depression on the gill-covers, one, two, or more such depressions are apparent on those parts when divested of the large scales that adhere to them; every scale, of which there are several on the gill-covers, leaving such a radiated depression on the thin membranaceous skin when taken off. —Those particulars inclined us to believe Mr. Pennant was in some measure misled by the imperfect state of the Scarborough specimen he examined*, and our opinion has been since confirmed by various cir-

* The figure of the Ballan wrasse in plate 44 of the British Zoology, seems to have been taken from a fish in a mutilated condition: the scales especially, which in the

PLATE LXXXIII.

cumstances. Mr. Travis, the son of the medical gentleman who furnished Mr. Pennant with the specimen he describes, informs us, the Ballan wrasse is the fish commonly known by the name of the old wife among the fishermen on the Scarborough coasts where it appears in shoals in the summer, and that there is only one sort usually found in those parts; this we have examined, and have no hesitation in saying it is the Ballan wrasse of Pennant, and the *Labrus tinca* of every other Ichthyological writer.

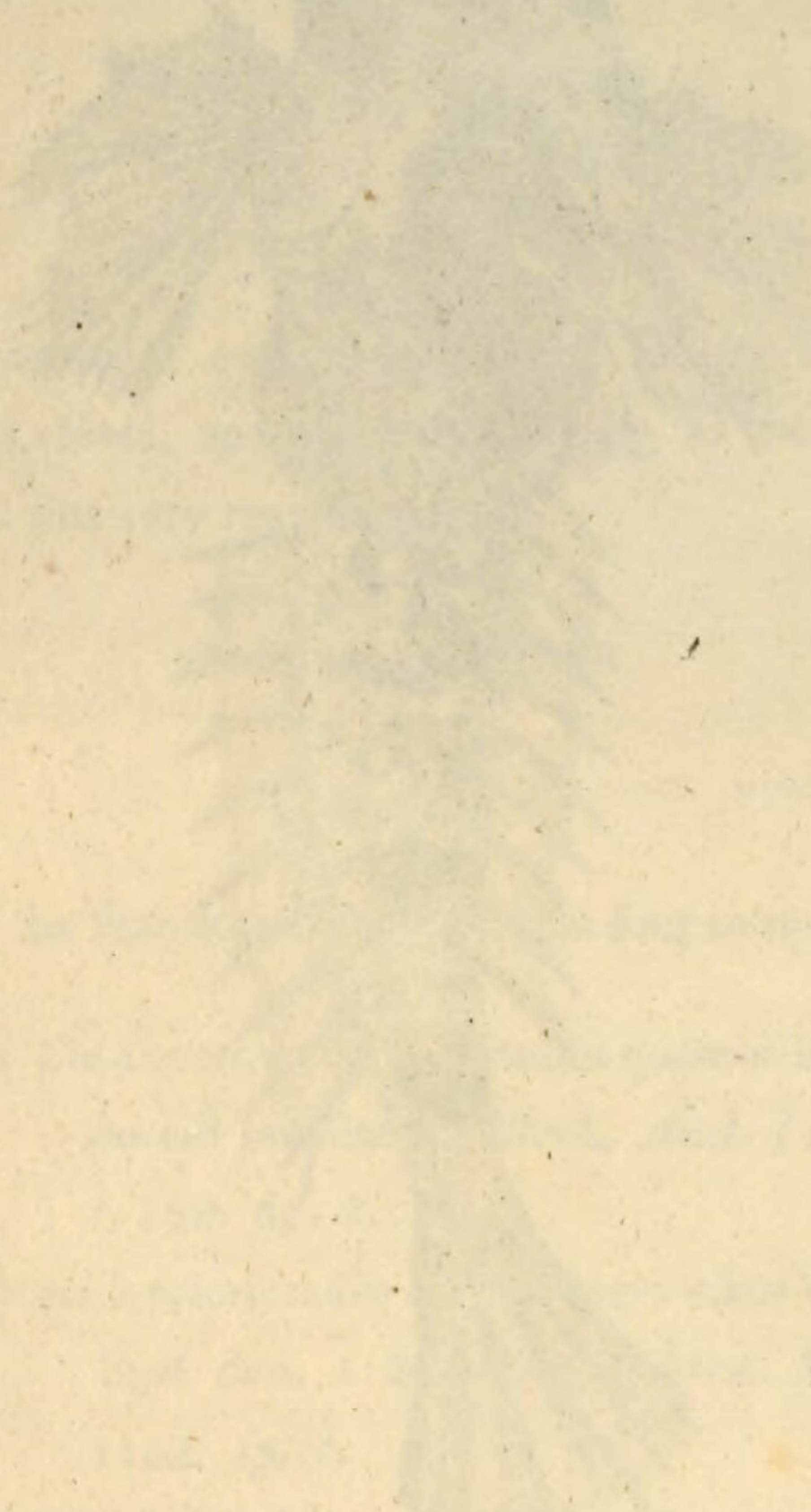
perfect fish are semicircular appear of no determinate figure, scarcely two being formed alike.—The Ballan wrasse in Shaw's *Gen. Zool.* v. 4. p. 2. 499. is merely a repetition of the same figure, and of course exhibits the same defect. In the last mentioned work it is recorded as a species on the authority of Pennant.

No small degree of ambiguity is attached likewise to the figure and history of the ancient wrasse in Pennant's *British Zoology*. His description accords with the common wrasse, but the figure given of the ancient wrasse is entirely at variance with it. This latter is referred to as doubtful, but we are surprized the author could have entertained the least conception of its being the same, if that figure be correct. In *Brit. Zool.* v. 3. pl. 47. n. 115. He describes the ancient wrasse as having sixteen spiny rays, and nine soft, while in his figure of that fish there are no less than twenty five spiny rays, and thirteen soft; the tail also contains sixteen rays instead of fourteen as described, and the anal fin thirteen soft rays besides the spiny ones in lieu of the nine enumerated. It is further observable that in this figure there is neither a sinking between the dorsal fin and tail, nor any sulcus on the nose. It might be therefore from a comparative view of this figure with the "Ballan wrasse," that Mr. Pennant was induced to consider the latter as a species distinct from the ancient wrasse, which last, it is probable, he copied from the work of another author.

PLATE LXIII

CHROMOLA LUTEA

1892



Chromola lutea (L.) Greene
Dioscoreaceae. 200. (1892) 1892. 1892. 1892.
The above is a list of the names of the plants which are
shown in this plate.

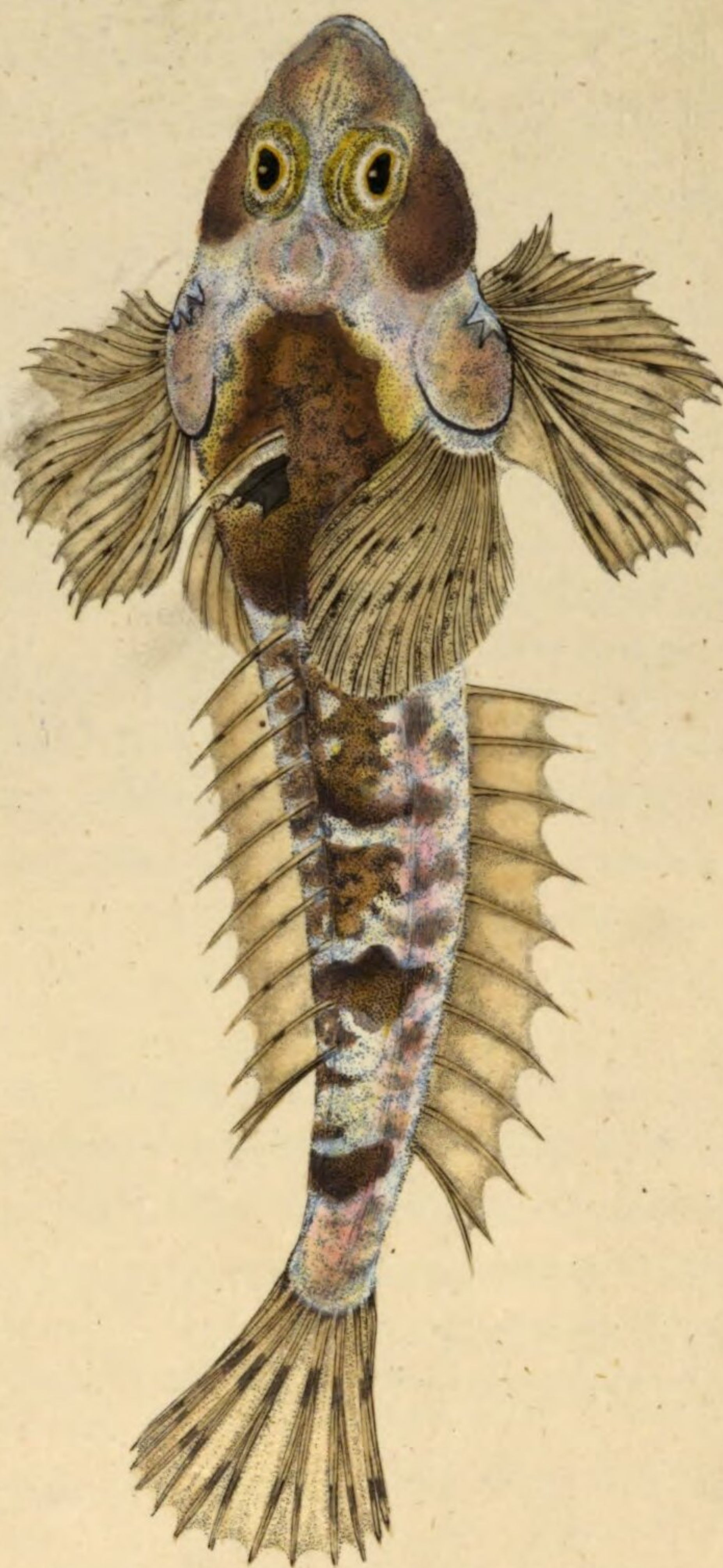


PLATE LXXXIV.

CALLIONYMUS DRACUNCULUS.

SORDID DRAGONET.

* PISCES JUGULARES.

GENERIC CHARACTER.

Superior lip doubled; eyes approximate. Six rays in the gill-membrane; gills closed, aperture for breathing in the neck. Body naked. Ventral fins very remote.

SPECIFIC CHARACTER

AND

SYNONYMS.

Rays of the first dorsal fin short, and four in number.

CALLIONYMUS DRACUNCULUS. C. radius quatuor in prima pinna dorsali brevibus. *Bloch, Anst. Fisch.* 2. p. 84. t. 162. fig. 2.

Callionymus. Dorsalis prioris radiis corpore brevioribus *O. F. Müller. Zool. dan.* t. 20.—*Gmel. Linn. Syst. Nat.* p. 1152. sp. 2.

Cottus pinna secunda dorsi alba. *Art. Gen.* 49. syn. 77.

DRACUNCULUS. *Will. Ichth.* 136. *Raii Syn. pisc.* 79.

SORDID DRAGONET. *Penn. Brit. Zool.* v. 3. p. 167. sp. 70.

PLATE LXXXIV.

The length of this fish is from five to six or eight inches, which last it rarely exceeds: the body is somewhat pellucid, varied with livid brown, and yellowish, and marbled with white. The first dorsal fin is remarkable for having the anterior part white, and the rest black. All the other fins are singularly pellucid, whitish, and have the rays marked with a few brownish dots. The head is broad, pointed, slightly convex above, and flattish beneath; the eyes prominent, and the upper jaw advanced beyond the lower one.

This species is of the marine tribe of fishes. It is found chiefly in the South of Europe. Müller includes it among the Danish fishes, and Duhamel as an inhabitant of the coasts of Normandy. Mr. Pennant received it from Mr. Travis, who, as we understand, met with it on the coast of Scarborough. We have observed it on the sandy shallows of the sea, on the coast of Wales. The French fishermen conceive this to be the female of the Gemmous Dragonet, *Callionymus Lyra*; they bear a remote resemblance to each other, but are, we think, certainly distinct.

The first dorsal fin in our specimen contains four rays, the second ten: the pectoral fin sixteen: the ventral fin is subdivided into lobes, and contain in each, five principal ribs, from which arise a number of lateral rays, as in the ventral fins of the Gemmous Dragonet. The anal fin contains ten rays, the posterior one of which is furcated like the posterior ray in the second dorsal fin; and the tail contains eight rays, all which, except the exterior one on each side, are ramose.

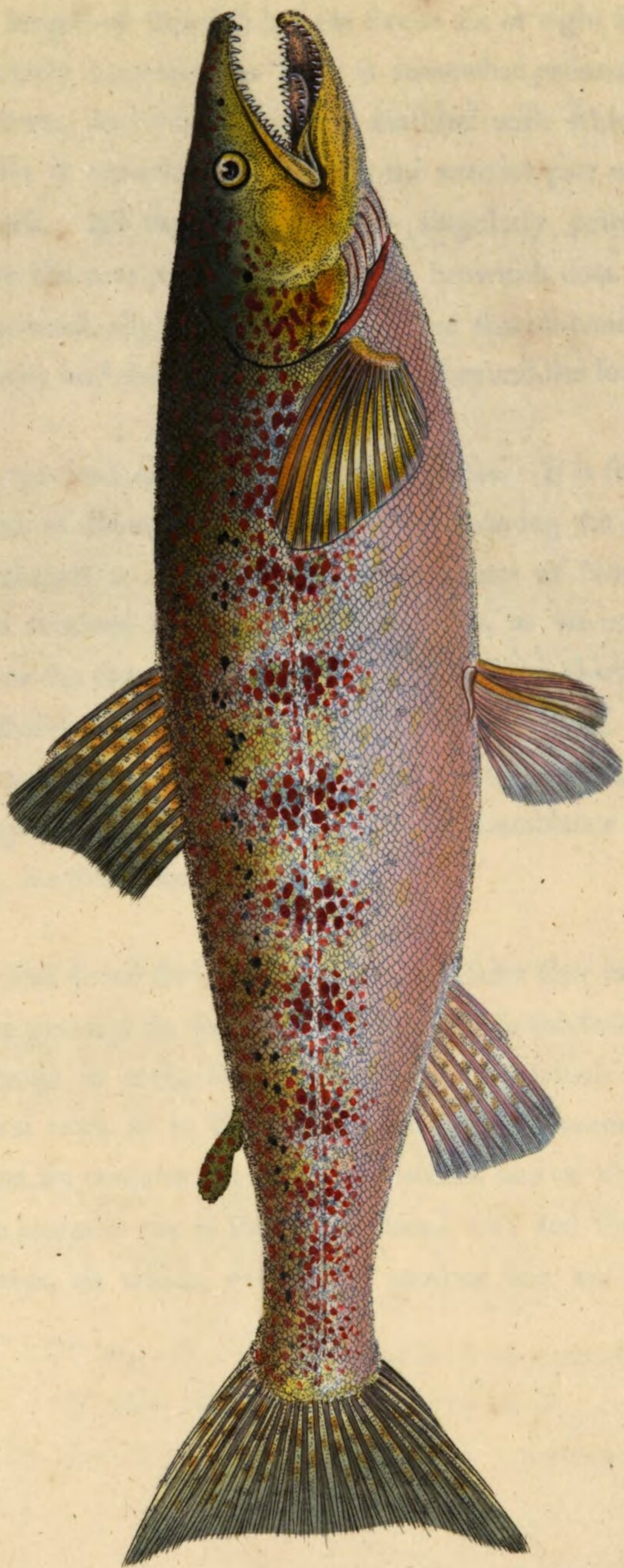


PLATE LXXXV.

SALMO FARIO.

TROUT.

*** PISCES ABDOMINALES.

GENERIC CHARACTER.

Head smooth, and compressed. Mouth large: lips small: tongue white, cartilaginous, and moveable: teeth in the jaws, and upon the tongue. Eyes moderate, and lateral. Branchiostegous membrane with from four to twelve rays; gill-cover of three plates. Body long, covered with rounded and very finely striated scales: back convex: lateral line straight, and nearest to the back: posterior dorsal fin fleshy without rays: ventral fin of many rays.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body spotted with red: lower jaw rather longest.

SALMO FARIO: maculis rubris maxilla inferiore sublongiore. *Art.*

gen. 12. *syn.* 23. *sp.* 51.

SALMO FARIO. *Linn. Fn. Suec.* 348. *Gmel. Linn. Syst. Nat.*

T. 1. *p.* 3. 1367. *n.* 4.

Salmo ocellis rubris iridibus lucidioribus, pinna anali radices 11.

Bloch. Fisch. Deutschl. 1. *p.* 148. *n.* 3. *t.* 22.

TROUT. *Will. Ichth.* 199.—*Raii syn. pisc.* 65.—*Penn. Brit.*

Zool. v. 3. *p.* 297. *sp.* 146.

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The Trout is one of the most beautiful of the fresh water tribe of fishes. It is a native of Europe and Siberia, inhabiting rivers that communicate with the sea, the waters of which are pure and cold, with a pebbly, or rocky bottom, and is therefore found in the greatest numbers as well as perfection in the rapid streams among mountains. The Trout is found in most other clear waters, and is the principal inhabitant of lakes in alpine situations throughout Europe.

Like the salmon, the Trout swims with much velocity. The activity and strength of this fish is astonishing: at the commencement of the spawning season it rushes up rivers difficult of access in defiance of numberless obstacles, in search of the most retired places to deposit its spawn, and in its progress will leap over stones or other impediments in the course of the river to the height of four or five feet. The food of the Trout consists of small fishes, testaceous animals, and flies which they catch by leaping out of the water, such as the Ephemerae, and Phryganeae, which hover near the surface. The spawning season is from September to October or later: the eggs are about the size of a pea, and of a bright orange colour.

This fish is subject to many varieties, differing in appearance according to the nature of the waters it inhabits, or the seasons of the year. In general when small, or of a moderate size, they are yellowish, or olivaceous, with a dusky back, the belly white and silvery, and the sides and back marked with a greater or less number of distinct red spots encircled with white, or blueish. The varieties spoken of by writers with regard to their form, colour, and dimensions are numerous, some of which may probably on further investigation prove to be distinct species, rather than varieties. The variety taken accord-

PLATE LXXXV.

ing to Mr. Pennant in *Llyndivi**, a lake in South Wales, and called *Coch y dail*, is marked with red and black spots as big as sixpences: Trout with spots conspicuously large, but not so considerable as those, we have taken in plenty in the Dee river, Merionethshire. In the Eynion, a river not far from Machynlleth in the latter county, and also in one of the Snowdonian lakes, according to the Hon. Daines Barrington, are found a variety of the Trout which is naturally deformed, having a crookedness in the tail, more decidedly characterised than in the common Perch †. The Trouts of certain lakes in Ireland, such as those in the province of Gallaway, known by the name of the Gillaroo Trout, are remarkable for the great thickness of their stomachs, though do not differ in other respects from the common Trout ‡. There are certain Trouts in the lakes of Scotland that are spotted very differently from the common sort, those we shall not enumerate among the varieties of the common Trout, as we suspect they may be of a distinct species.

With regard to size, the Trout varies greatly: its ordinary length is about twelve inches. Old Warton records the Fordidge Trout

* *Llyn Teivi*?

† *Phil. Trans. vol. 64. p. 116. 310.*

‡ Mr. Pennant had an opportunity of comparing one of the Gillaroo Trouts, with a large one from the Uxbridge river; the last was, if he recollects, smaller and out of season, and its stomach, notwithstanding it was very thick, was much inferior in strength to that of the former; but on the whole there was not the least specific difference between the two subjects. *Penn. Brit. Zool.* The thickness of the stomach of this fish proceeds, no doubt as Pennant imagines, from the superior quantity of shell fish which it finds in the waters it inhabits, and which may call more frequently for the use of its commutating powers than is requisite in Trouts.

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as one of the largest kinds: this, he tells us, bears the name of a town in Kent, near Canterbury, where it is usually caught: many of those Trout, he observes, are nearly as large as the Salmon, but are known by the difference of their colour; and the flesh, in their best season, cuts very white: these, Walton supposed, lived alternately nine months in the sea, and three in the river. The Trouts of Ireland called by the natives Buddaghs, are found of a large size in Lough Neagh, some of which have been known to weigh thirty pounds. Trouts are also taken in Hulse Water, a lake in Cumberland, which are reported to be of a size superior to those*. In the reign of Charles the second, a Trout was taken in the river Kennet, near Newberry, with a casting net, that measured forty-five inches†. One of the largest we have seen was caught in a stream contiguous to the Thames, near Hampton, Surrey, about three years ago. This gigantic creature measured thirty nine inches from the tip of the nose to the end of the tail: the jaws of this overgrown fish were more elongated than usual in the Trout, and both those and the tongue were armed with strong incurvated teeth, of a white colour, tinged with pale violet; and as in the Salmon, when out of season, the tip of the lower jaw turned up, and was received when the mouth closed, between the two fore teeth in the upper jaw. The colour was subolivaceous on the back, tinged with fine golden yellow; on the sides were several broad spaces of a lighter colour, marked with a cluster of scarlet spots; and the back was spotted with orange. The whole of the lower surface was of a pale Salmon colour; the fins yellowish, with the rays pale pink at the extremity, and at the base orange colour; the pectoral fin and tip of the dorsal fin, and tail dusky; the two latter

* It is said those are sometimes found so large as to weigh thirty pounds.

† Sir J. Hawkins note on Walton *Comp. Angl.* p. 122.

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spotted with dirty orange. This enormous fish is the subject represented in the annexed plate, and which it was conceived would be deemed more interesting than one of the ordinary kind. Another individual of the common Trout, little inferior to this, was formerly preserved in the Edinburgh Museum, the colours of which agreed with this, except in being generally darker; the figure and disposition of the spots are the same; this was caught in a small rivulet near Edinburgh, and is now in our possession. Besides those, we have seen a third Trout of large size, in which the spots were deeper red than in either of the former.—The Trouts of the lake of Geneva have been long celebrated for their vast size. Gesner relates that Trouts three cubits in length have been taken in that lake.

The flesh of this fish is in high repute for the excellence of its flavour. It is has been remarked that the Trout is fat when other fish are thin, and meagre on the contrary, when others are fat, so that in the winter the flesh is white and of a bad flavour, and in the summer red, and good. We may add that this difference in the colour of the flesh does not depend on the seasons, having ourselves seen Trout both of the red, and white kind, taken at the same season in two contiguous streams in Cardiganshire, one of which invariably produces the red, and the other the white Trout. Walton says, the Trout comes in and goes out of season with the stag and buck, and are in high perfection in May.

Ausonius, who lived in the beginning of the fifth century, seems to be considered the first of the ancient writers who has noticed the Trout; he celebrates it for its beauty without adverting to the deliciousness of its flesh. Authors of later times speak of it with the highest commendation as an article of food, excepting those of a

PLATE LXXXV.

large size, which are generally moist, or coarse, and of an ill flavour. The Trout varies in excellence, according to the qualities of the waters they inhabit, and the nature of their food: one sort, which is found at the source of the Orbe, in the Canton of Berne, is celebrated for the delicious flavour it acquires from subsisting chiefly on Crabs, and other crustaceous animals;—those of the purest mountain streams are also preferred to such as are found in swampy places in the low lands, or in still waters. The fisheries of the Trout are under the cognizance of the laws in most countries; in England, the Trout is regarded as private property, and protected by penal statutes. In Germany the laws are very severe, those who take the Trout unlawfully being punished with imprisonment, and in some of the provinces even with the loss of a hand. In the kingdom of Congo, where, according to Bloch, the Trout is also found, the like offence is punishable with death.

The first dorsal fin in the common Trout usually contains about eleven rays; pectoral fin thirteen; ventral fin nine; anal fin nine; and tail twenty-five.

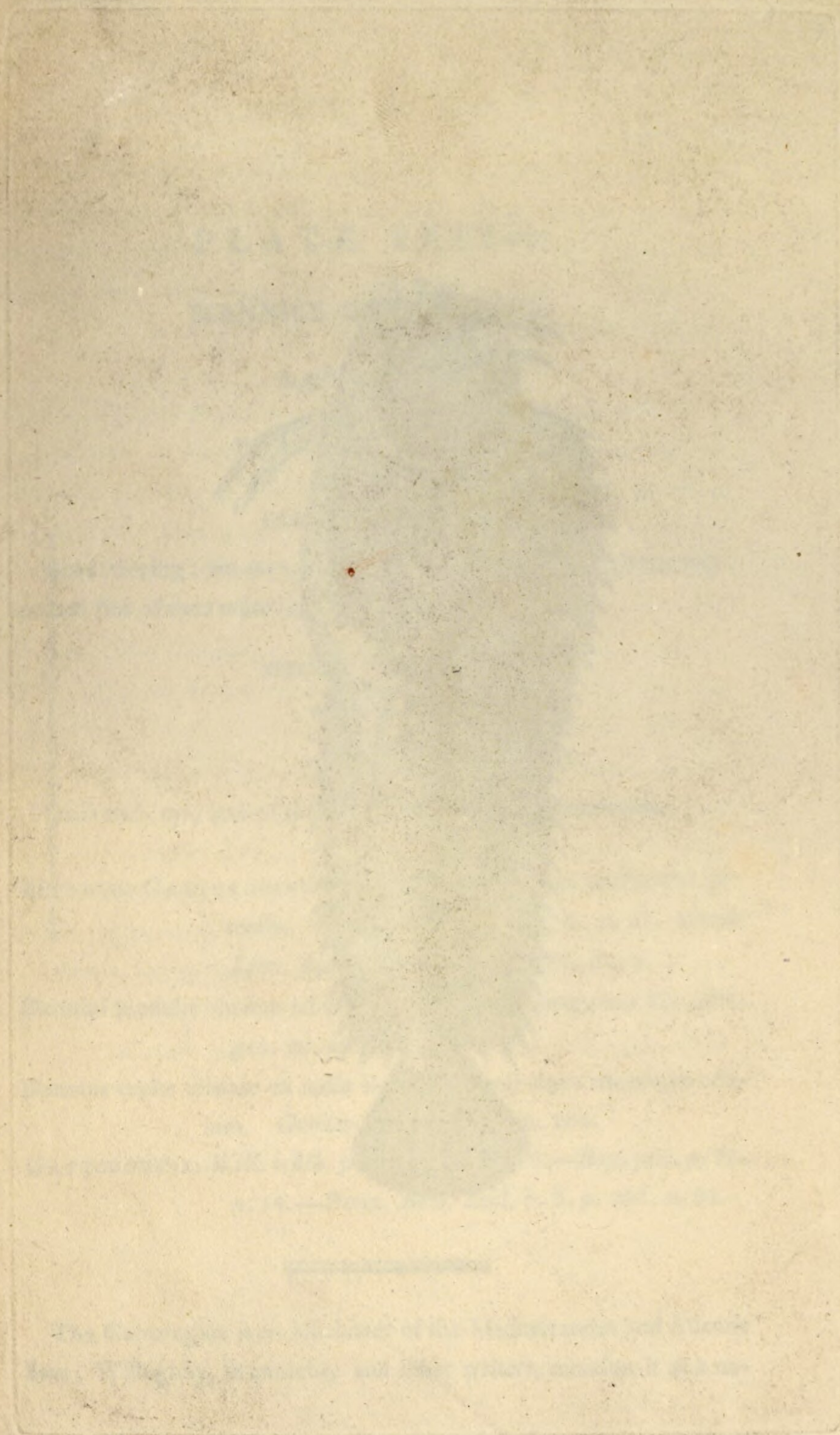




PLATE LXXXVI.

BLENNIUS GATTORUGINE.

GATTORUGINE.

* PISCES JUGULARES.

GENERIC CHARACTER.

Head sloping: six rays in the gill-membrane: body lanceolate: ventral fins of two united rays: anal fin distinct.

SPECIFIC CHARACTER

AND

SYNONYMS.

Over each eye, and on the hind head a palmated membrane.

BLENNIUS GATTORUGINE: pinnulis superciliarum nuchaeque palmatis. *Linn. Mus. Ad. Fr.* 2. p. 61. *Gmel.*

Linn. Syst. Nat. T. 3. p. 1177. *Sp.* 5.

Blennius pinnulis duabus ad oculos, pinna ani ossiculorum 23. *Art. gen.* 26. *syn.* 44.

Blennius capite cristato ex radio simplici inermi supra utrumque oculum. *Gronov. Zooph.* p. 76. n. 264.

GATTORUGINE. *Will. ichth.* p. 132. t. H. 2. f. 2.—*Ray, pisc.* p. 72.

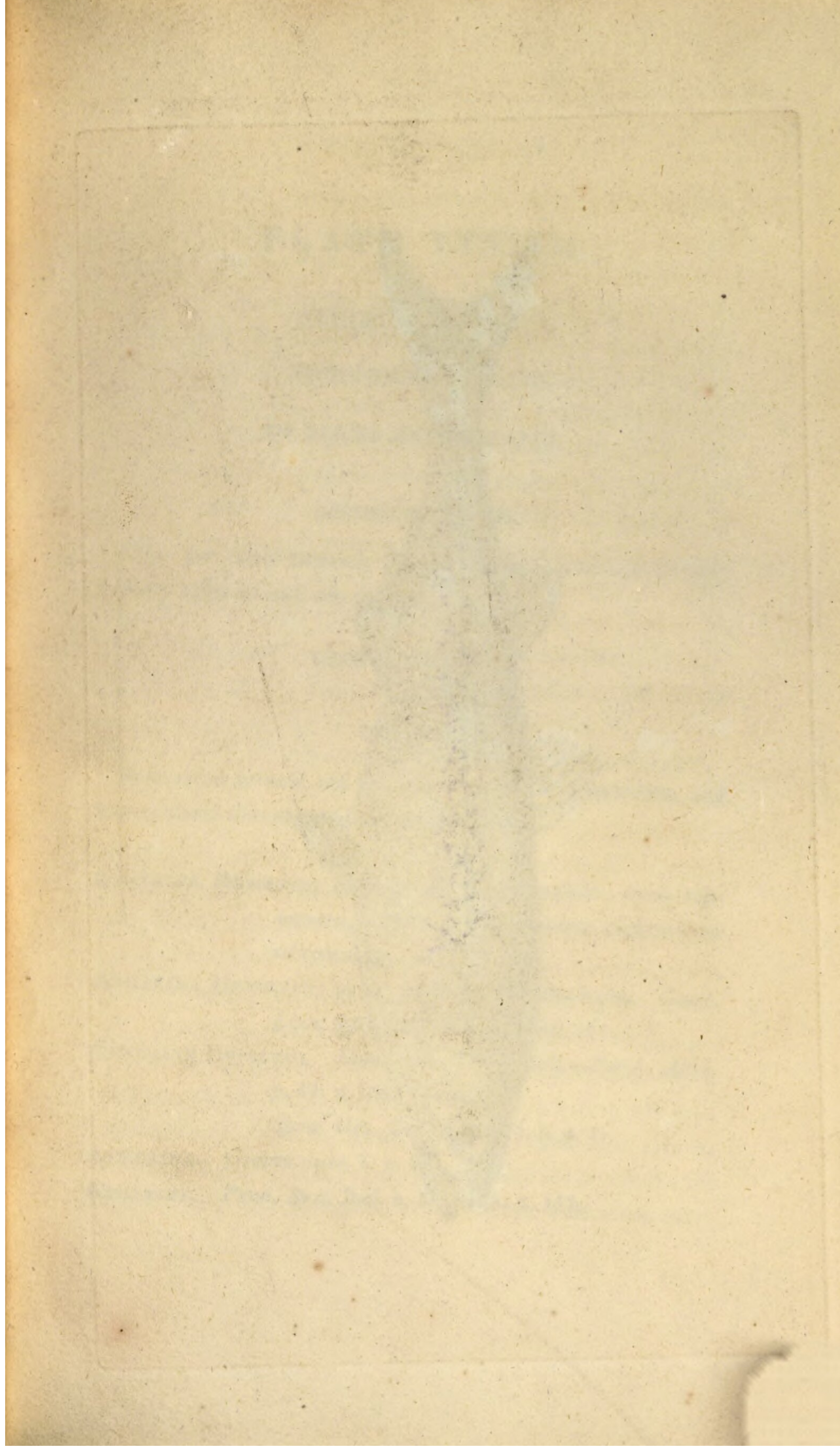
n. 14.—*Penn. Brit. Zool.* v. 3. p. 207. n. 91.

The Gattorugine is an inhabitant of the Mediterranean and Atlantic Seas; Willughby, Brunniche, and other writers, mention it as a na-

PLATE LXXXVI.

tive of the Southern parts of Europe; Gronovius received it from the Cape of good Hope, and according to Pennant, it was discovered to be a British fish on the coast of Anglesea. It appears to be one of the most local and uncommon of our littoral fishes, and has much the same habits as *Blennius Pholis*, the smooth Blenny.

This species seldom attains to a greater length than six or eight inches, the colours are variable in different specimens according to most authors. In general, however, the back and sides are an intermixture of reddish, and cinereous, marked transversely with irregular waves of brown, and the lower parts white and silvery. The head of this fish is rather small in proportion, with the eyes remarkably prominent, and of a fine scarlet colour, and the palmated membranes on the head red. The body is rather compressed on the sides. The anterior half of the lateral line is double, its lower limb extending in a straight direction from the gills to the tail, and midway between this and the back is an arched lateral line originating at the hind part of the head, and curving down to the former, with which it is united a little behind the tip of the pectoral fin. In our specimen the first dorsal fin contains thirty-two rays: pectoral fin thirteen rays: ventral two rays of nearly equal length, with a very small lateral appendage: in the anal fin are twenty rays, and in the tail twelve: the rays of the tail are branched, all the rest are simple, or undivided.



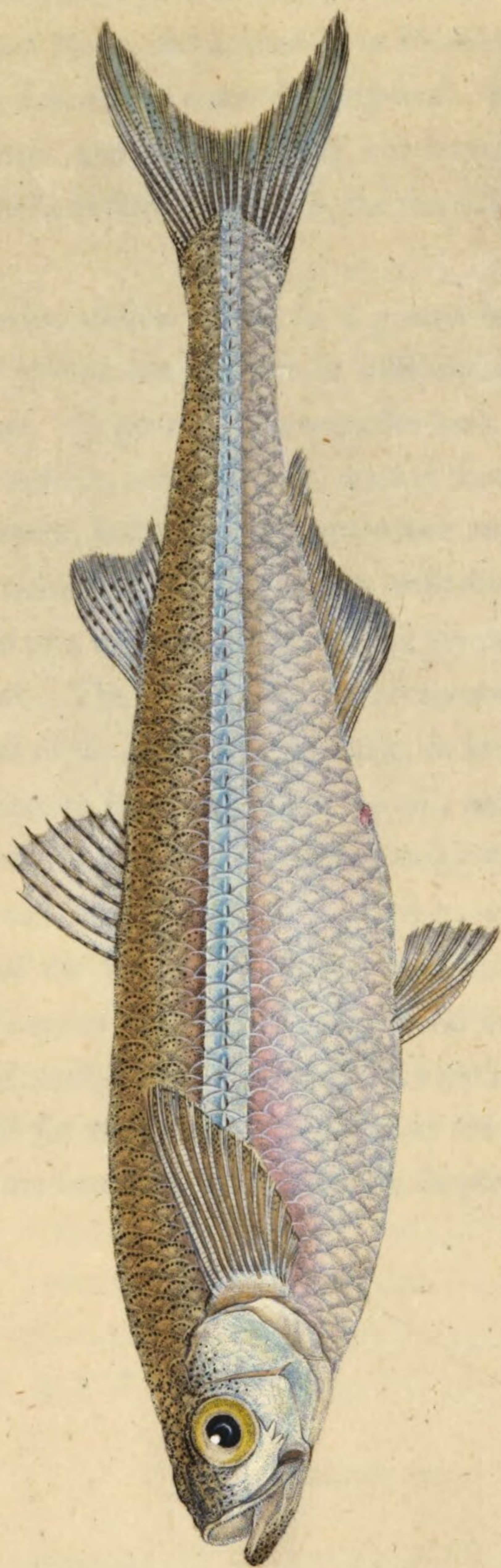


PLATE LXXXVII.

ATHERINA HEPSETUS.

EUROPEAN ATHERINE.

*** PISCES ABDOMINALES.

GENERIC CHARACTER.

Upper jaw rather flattened: gill membrane furnished with six rays :
a silvery stripe on each side the body.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body rather pellucid and pale: back tinged with testaceous, and
subreticulated with oblique lines of blackish dots.

ATHERINA HEPSETUS: corpore sub pellucido pallido; dorso sub-
testaceo, lineis obliquis punctorum nigricantium
subreticulato.

ATHERINA HEPSETUS: pinna ani radiis fere duodecim. *Gmel.*

Linn. Syst. nat. T. 3. p. 1396. 183.

ATHERINA HEPSETUS. *Linn.—Hasselq. it. 382.—Forsk. Arab.*
p. 69. n. 101.

Shaw. Gen. Zool. p. 130. v. 5. p. 1.

ATHERINA. *Gronov. mus. 1. n. 66.*

ATHERINE. *Penn. Brit. Zool. v. 3. p. 328. n. 157.*

PLATE LXXXVII.

The Atherine is a fish of considerable elegance. In size and general similitude it approaches nearest to the Smelt. Like that delicate fish the whole body is semidiaphanous, and partakes of the palest tints of iridescent colours, of testaceous, and pellucid white. Though sometimes confounded with the smelt by inattentive persons, the Atherine is at once distinguished by the distinct broad silvery stripe that passes along the sides the whole length from the gills to the base of the tail, and which in point of splendor even emulates the effect of silver at its highest polish. The more accurate observer need not be informed, that the second or posterior dorsal fin in the common smelt, as in others of the *Salmo* tribe to which it appertains, is small, fleshy, and destitute of rays, as in the Salmon and Trout, while on the contrary the posterior dorsal fin of the Atherine is large, and consists of a number of distinct rays connected by a thin pellucid film like the other fins.

Naturalists describe the Atherine as a native of the Mediterranean, European, and Egyptian Seas. Forskal found it in the Red Sea: Hasselquist at Smyrna: and Sonnini, among the islands of the Archipelago; Willughby saw it at Venice: Gronovius mentions it as being found on the coast of Holland: Duhamel on different coasts of France: Brunniche, on that of Sheppy island in England; and Pennant as very common in the sea near Southampton, where he tells us it is called a smelt.—According to this last author it never deserts Southampton, and is constantly taken there, except in hard frosts. Our Atherines are from the coast of Devonshire, where we learn this delicate fish is very abundant, but whether it is found also on other coasts of our island, as Pennant intimates, we are unable to determine. By accident, or in a few solitary instances, it may have been found on other coasts, but we must observe that our enquiries after it in other

PLATE LXXXVII.

places have hitherto proved fruitless. On the eastern coasts we have pretty good authority for believing it is not found, or at least in any number as at Southampton.

The author of the British Zoology, Mr. Pennant, rather mistakes the ordinary size of the Atherine, in stating its length at only four inches and one fourth, those of moderate dimensions being from five to six inches long. The head is broad, flattish, very sloping in front, and marked down the center with an interrupted carena or ridge: the gill covers silvery, and the rest of the head pellucid and speckled with fuscous. The body is about the thickness of the common smelt, and is tinged with a variety of delicate tints as in that fish, the upper parts only inclining more to pale testaceous, or yellowish brown. The scales on the back seem at first glance of a lozenge form; on close inspection these appear obtusely circular and marked near the edge, or outer margin, with a series of dusky dots, which from their disposition give the whole back the appearance of being reticulated by oblique lines of dots; those dots are sometimes confusedly broken, and are larger or smaller on different parts of the same fish, but in all are so distinctly marked as to give the back the subreticulated appearance before mentioned. All the fins, except the ventral, are very delicately speckled with fuscous. The lateral stripe is silvery, changeable in the shade to steel blue, and marked down the middle with a longitudinal series of little elevations which constitute the lateral line. This stripe on the sides is straight as Mr. Pennant mentions: we could never however discover the row of black dots beneath it, which this writer describes in his fish.

Linnæus, who considers the number of rays in the anal fin as a criterion of this species, states them at "about twelve:" a specific

PLATE LXXXVII.

character so vaguely expressed cannot be depended on, the more especially since recent observations have proved the fallacy of this character. Bloch found thirteen rays in the anal fin of his fish; and the number in various specimens examined by ourselves to ascertain this point varied from fourteen to fifteen, sixteen, and seventeen. Mr. Pennant neglected to count the rays in any of the fins, so that it is impossible to determine their number in the anal fin of his fish. The individual selected by us for representation contained seventeen rays in the anal fin. In the first dorsal fin were eight rays, in the second eleven: the pectoral fin contained thirteen rays: the ventral six; and the tail, which is much furcated, fifteen.

This fish is in season from March to the latter end of May, or beginning of June, when the spawning time commences. Sonnini observed this fish in the Archipelago, where we learn from his account the modern Greeks call it *Atherinos*, a name derived from its ancient appellation *Atherina*. They assemble, according to this author, in vast shoals near the shores of most of the islands, and are sometimes taken in prodigious quantities by a very simple device. A man being provided with a long stick, at the end of which is fastened a horse's tail, or a piece of black cloth, walks along the shore in calm weather and trails it through the water. The Atherines gather in a crowd round it, and follow its motions; in this way they are conducted into some opening formed by two rocks, which is closed by a net fastened to two sticks, when the water is agitated, and the fishes secured by drawing the extremity of the net together. The Atherine, it is added by Sonnini, held up to the light is diaphanous, and when dressed, even by frying, the spots or little black specks of its back are still very apparent, as well as the longitudinal stripe on the sides of the body, which become only blackish and more narrow.

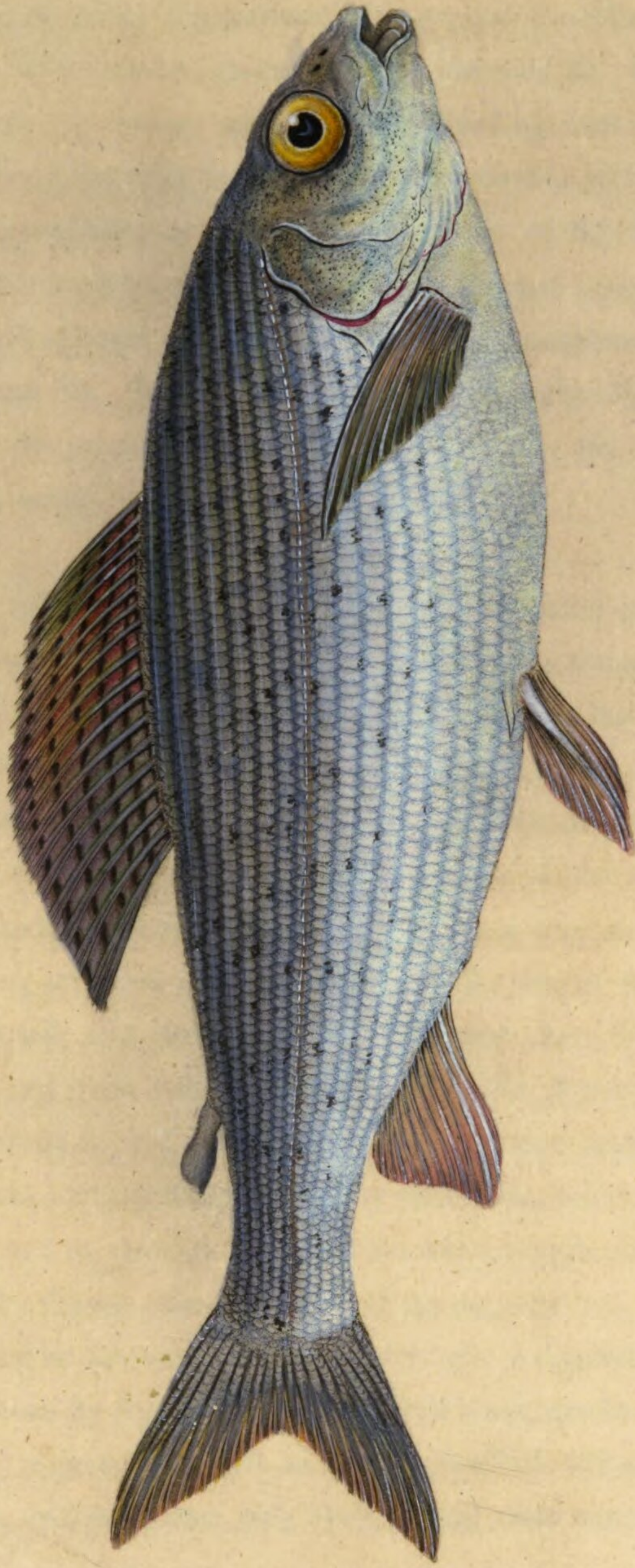


PLATE LXXXVIII.

SALMO THYMALLUS.

GRAYLING.

*** PISCES ABDOMINALES.

GENERIC CHARACTER.

Head smooth, and compressed. Mouth large: lips small: tongue white, cartilaginous, and moveable: teeth in the jaws, and upon the tongue. Eyes moderate, and lateral. Branchiostegous membrane with from four to twelve rays; cover of three plates. Body long, covered with rounded and very finely striated scales: back convex: lateral line straight, and nearest to the back: posterior dorsal fin fleshy without rays: ventral fin of many rays.

SPECIFIC CHARACTER

AND

SYNONYMS.

Upper jaw rather longest: first dorsal fin with about twenty-three rays, large, and varied with violaceous and red: body silvery, with cinereous lines.

SALMO THYMALLUS: maxilla superiore longiore, pinna dorsali
prima radiis sub 23. magna violaceo-rubroque
variegata corpore argenteo cinereo lineatis.

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SALMO THYMALLUS: maxilla superiore, longiore, pinna dorsi radiis
23. *Mül. Zool. Dan. p. 49. n. 416.—Gmel.*
Linn. Syst. Nat. T. 3. p. 1379. sp. 17.

Coregonus maxilla superiore longiore, pinna dorsi ossiculorum 23.
Art. Gen. 10. Syn. 20. spec. 41.—Kram. el.
p. 390. n. 2.

Salmo pinna dorsi radiis 23. *Bloch Fisch. Deutchl. 1. p. 158. n.*
4. t. 24.

Thynnus. *Rondel. pisc. 2. p. 187, &c.*

Trutta edentula, labiis pro dentibus limæ instar exasperatis, &c.
Klein miss. pisc. 5. p. 21. n. 15. t. 4. f. 5.

Thymallus. *Will. ichth. p. 88. t. n. 8. Gesn. aq. 979.—Aldr.*
pisc. p. 593.

GRAYLING.—*Ray.—Penn. Brit. Zool. V. 3. p. 311. n. 150.*

This is a migratory fish, passing the winter season in the open sea, and the summer in the fresh waters; early in the spring they ascend the rivers, where they remain till autumn, and then return to their former element. The haunts of this fish in summer are the clear, cold, and rapid streams of Alpine regions, and in such situations, are found in various countries of Europe; and in Siberia. Its food consists principally of Crabs, testaceous animals, worms, insects, and the fry and eggs of other fishes, especially those of the Trout and the Salmon, both which commonly abound in the streams inhabited by the Grayling. The Swedish fishermen are so well assured of its partiality for the eggs of the Salmon, that at the spawning season, whenever the Graylings make their appearance, it is a natural conclusion the Salmon are not far distant. It is generally understood

PLATE LXXXVIII

that the Grayling is not an inhabitant of Norway, as Pontopiddan does not mention it in his Natural History of that country. On the contrary, the Grayling is no where more abundant than in Lapland, where the flesh is eaten in common by the peasants, and a substitute for rennet is obtained by pressure from its entrails, with which they convert the milk of their rein deer into cheese.

The flesh of the Grayling appears to be in very general estimation for its superior delicacy and flavour. Gesner affirms, that in Switzerland it is accounted the choicest of all fish. It is taken in some of the Italian rivers, and in France; in the last of which, the Loire, is celebrated for producing it in great perfection. Bloch tells us it is found in Silesia, in the mountains of Geants: in Prussia, in the Curisch-Have; and in Pomerania, in the Sclave, not far from the Baltic. In some countries the Grayling is so much admired, that the lower orders are forbidden, under severe penalties, to fish for them, those being reserved for the tables of the great. England produces this flesh in some plenty, though still it must be classed among the more local species. Old Walton found it in the Dove, in the Trent, and some small rivers that run by Salisbury. Sir John Hawkins, one of the annotators on Walton, further mention its being found in many rivers of the north, particularly in the Humber and the Wye, which runs through Herefordshire and Monmouthshire into the Severn. Pennant says it is found in the rivers of Derbyshire; in some of those of the north; in the Tame, near Ludlow; in the Lug, and other streams near Leominster; and in the river near Christ Church, Hampshire. In the Dee river, near the lake of Bala, Merionethshire, North Wales, we have taken it ourselves, and have also received it from the vicinity of Scarborough, in Yorkshire.

PLATE LXXXVIII.

This fish spawns about the beginning of April,* or sometimes so late as May, and it is at this season they leave the sea, and ascend rivers to drop their spawn among the stones and gravel in the deeper parts of the streams. They do not multiply fast, and are never found in any of our rivers in abundance, like the Trout and other prolific species. The Grayling is reputed an eager and voracious fish, perhaps without sufficient reason, for although it will sometimes rise to the fly, the minnow, or other baits of an expert angler, it is a cautious fish, lurking close under the shelter of the stones, or herbage on the steeper banks of the stream, where it seems to examine the bait at leisure, and, if disturbed, darts away with amazing swiftness, and hence it happens, the Grayling is more commonly taken by the net than the line.

The Grayling ranks among the number of fishes that live to a great age; it grows, in common, to the length of twelve or fourteen inches: Walton speaks of the largest being eighteen inches in length. Mr. Pennant mentions another, the most considerable in point of size he ever heard of, that was taken at Ludlow; this was above half a yard long, and weighed four pounds six ounces. Upon the Continent they rarely arrive at this size; there are instances, indeed, of its attaining to the size of two feet, but those are rare. The word Grayling is corrupted from Grey-line, or Grey-lined, alluding to the numerous longitudinal lines upon the body of this fish, which distinguishes it in a particular manner from the rest of the Salmon tribe. The peculiar scent observeable at certain seasons in the Grayling, as in the Smelt, has obtained it the name of Thymus and Thymalus*, the odour it exhales at those times being thought

* *Salvian. Belon. Gesner.*

PLATE LXXXVIII.

to resemble that of the savory herb thyme, About the beginning of the last century, or earlier, it was indeed imagined, by fanciful writers, to subsist, at particular seasons, on what they denominated Water-thyme; they seem persuaded, the powerful aromatic smell of the fish was contracted from this species of food, an idea apparently borrowed from Ælian*. Others say it rather resembles the smell of new honey than of thyme. Mr. Pennant denies the existence of this smell. We have never, ourselves, observed any such smell, but, as it is stated to be only at particular seasons, and has been attested by various observers, the fact is not to be disputed on trivial grounds. The name *Umbra*, *Umber*, or as the French call it *Ombre*, can only allude to its swiftness in swimming, the fish, when disturbed, disappearing in an instant, like the transient glimpse of a shadow.

This fish is of an elegant form, the colour silvery, inclining on the sides to cinereous purple, and on the back rather more to dusky. Besides the longitudinal lines, the body is sometimes marked with a few dusky spots. The first dorsal fin in the specimen figured is remarkably large, and contains eighteen rays; the second is small and fleshy; the pectoral fin has twelve rays; ventral seven; anal eleven; and the tail, which is much furcated, nineteen rays.

* An opinion more absurd than this prevailed about the same time. It is gravely told by old Walton, that "the French value the Umber or Grayling so highly, that they say he feeds on gold, and say that many have been found in their famous river *Loire*, out of whose bellies grains of gold have been often taken!"



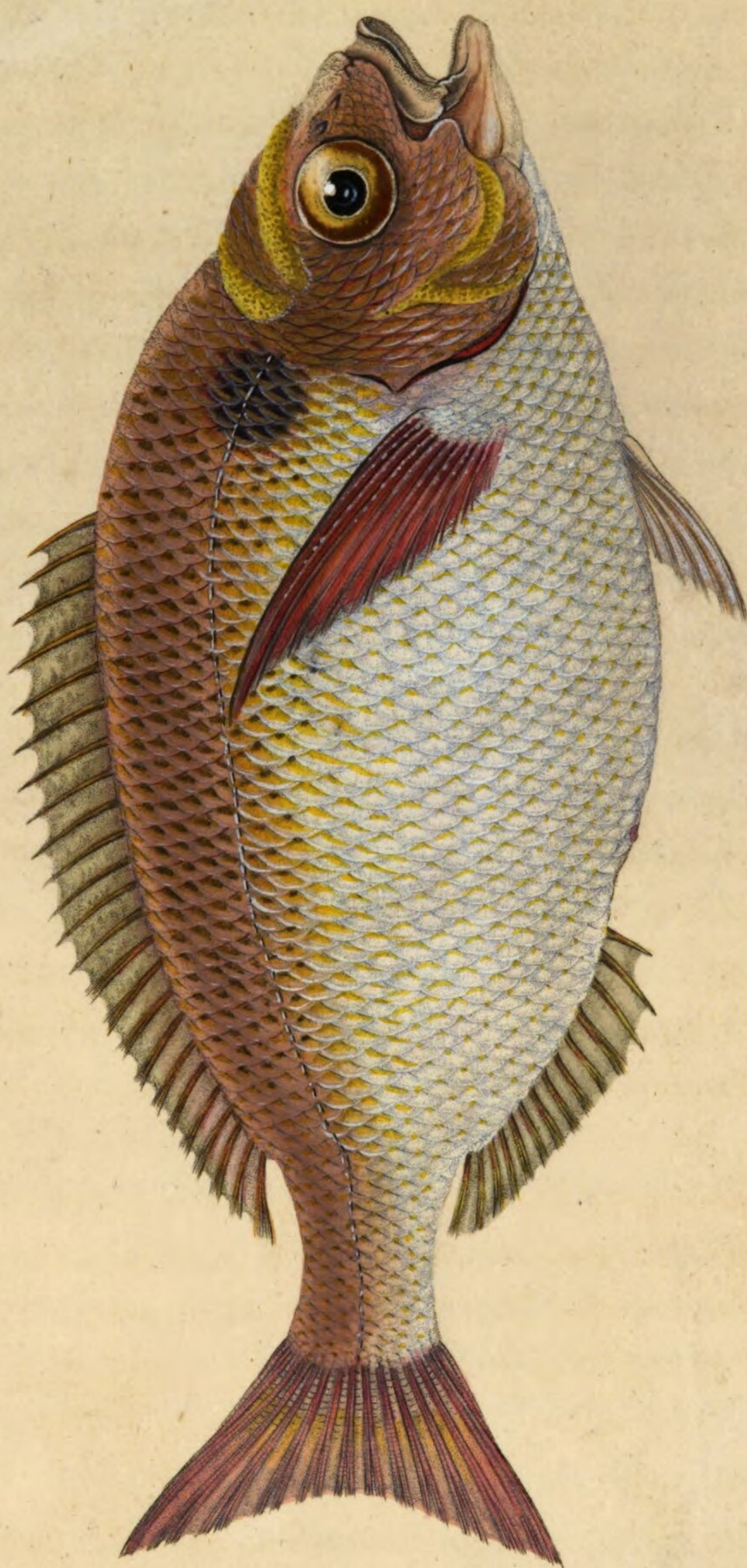


PLATE LXXXIX.

SPARUS AURATA.

LUNULATED GILT-HEAD.

** PISCES THORACICI.

GENERIC CHARACTER.

Teeth strong, those in front disposed in one series, or more: grinders somewhat obtuse and crowded: lips doubled in most species: branchiostegous membrane five-rayed, cover scaly: body compressed: lateral line incurvated behind: pectoral fin rounded.

SPECIFIC CHARACTER

AND

SYNONYMS.

Over the eyes two pale semilunar spots edged with gold; sides with a blackish spot intersected by the base of the lateral line.

SPARUS AURATA: lunulis duabus pallidis aureo-cinctis supra oculos, linea laterali basi maculam nigricantem dissecante.

SPARUS AURATA: lunuli aurea inter oculos. *Linn. Mus. Ad. Fr.* 2. p. 72.—*Gmel. Linn. Syst. nat. T. 3. p.* 1270. sp. 1.

Sparus dorso acutissimo, linea arcuata aurea inter oculos. *Art. gen.* 25. syn. 63.

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Sparus Aurata, La Dorade. *Bloch. t.* 266.

AURATA. *Plinii, Lib. IX. c.* 16.—*Rondel.* 115.—*Gesn. pisc.* 110. 112.

GILT-HEAD, or GILT-POLL. *Will. ichth.* 307.—*Raii. syn. pisc.* 131.

LUNULATED GILT-HEAD. *Penn. Brit. Zool. v.* 3. *p.* 240. *n.* 112.

The Lunulated Gilt-head is a native of the Mediterranean, the Atlantic, and the Seas in the North of Europe, but as far as we can learn is no where more abundant than in the seas surrounding the Grecian islands, and the Cape of Good Hope; at the latter place, according to Kolben, they are taken in the greatest plenty between the months of May and August. In the South of Europe this fish is also frequent, towards the North diffused more sparingly, and in the vicinity of the British islands is considered one of the rarer species of the finny tribes.

In point of size these fish are sometimes considerable: those of four, five, or six pounds weight are common; they grow according to Mr. Pennant to the weight of ten pounds. This even is not the utmost; we are assured by Bloch that on the coast of Sardinia they are sometimes caught of twenty pounds weight, and one is recorded by Hasselquist, which he saw at Smyrna, that measured a full ell in length. The largest we have seen was taken on the British coast and weighed about seven or eight pounds.

This is a marine fish, preferring deep waters close to the boldest rocky shores. Sometimes it roves from the sea into the contiguous

PLATE LXXXIX.

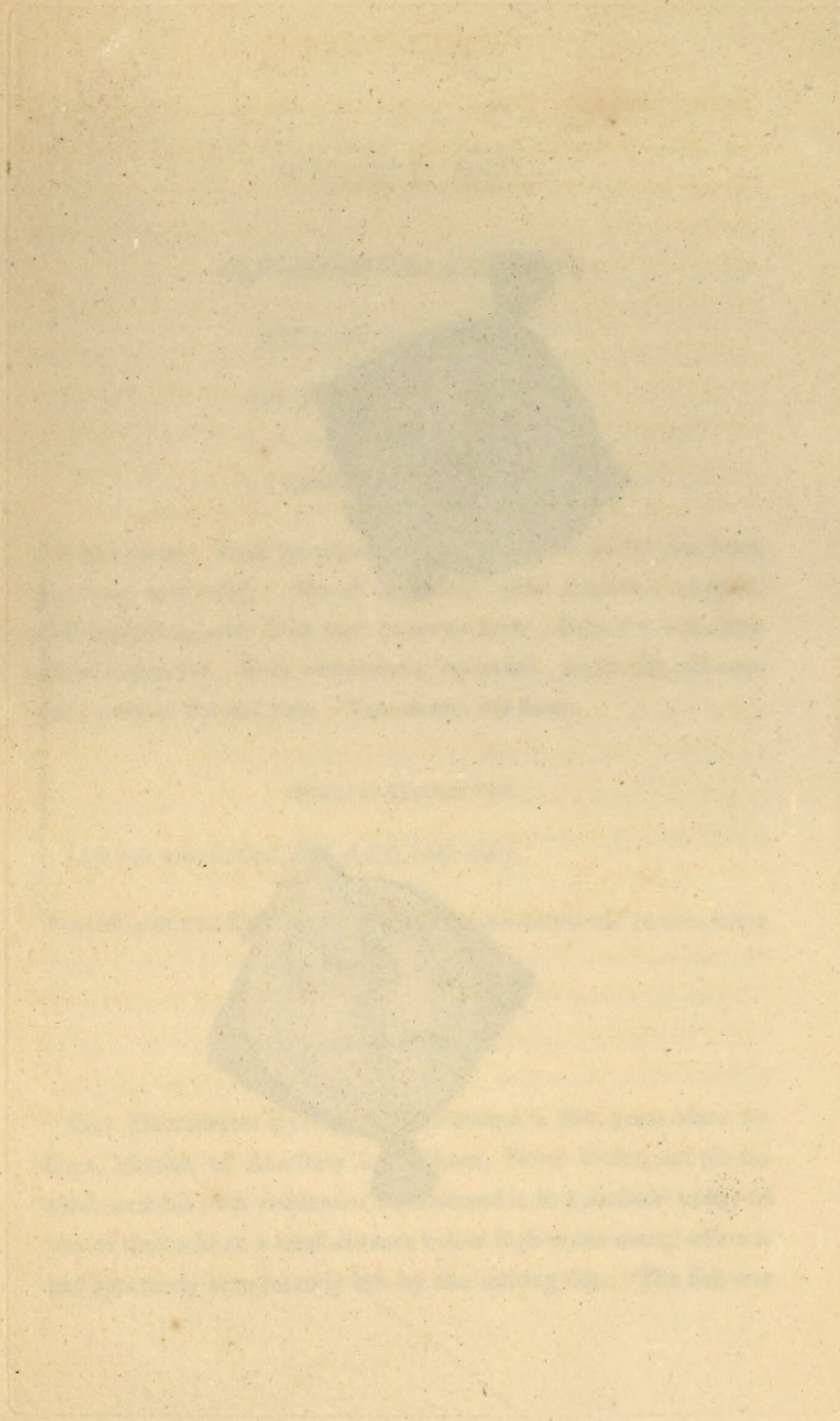
rivers and streams, probably like a number of other sea fishes, to drop its spawn in places of greater security than its usual haunts afford. This fish was known to the ancient Romans: they consecrated it to Venus, under the name of *Aurata*; and the flesh, which is tender, was in high repute among them: those taken in the open sea during the winter season, seem to have been preferred, and of course obtained the highest price. In the vicinity of Rome the Gilt-head is taken at all times of the year, but in the greatest numbers from May to October. The common mode of capture along the whole coast of the Mediterranean, is by the hook and line, baited with pieces of crabs, whelks, or other crustaceous and testaceous animals, which constitute its favourite food.

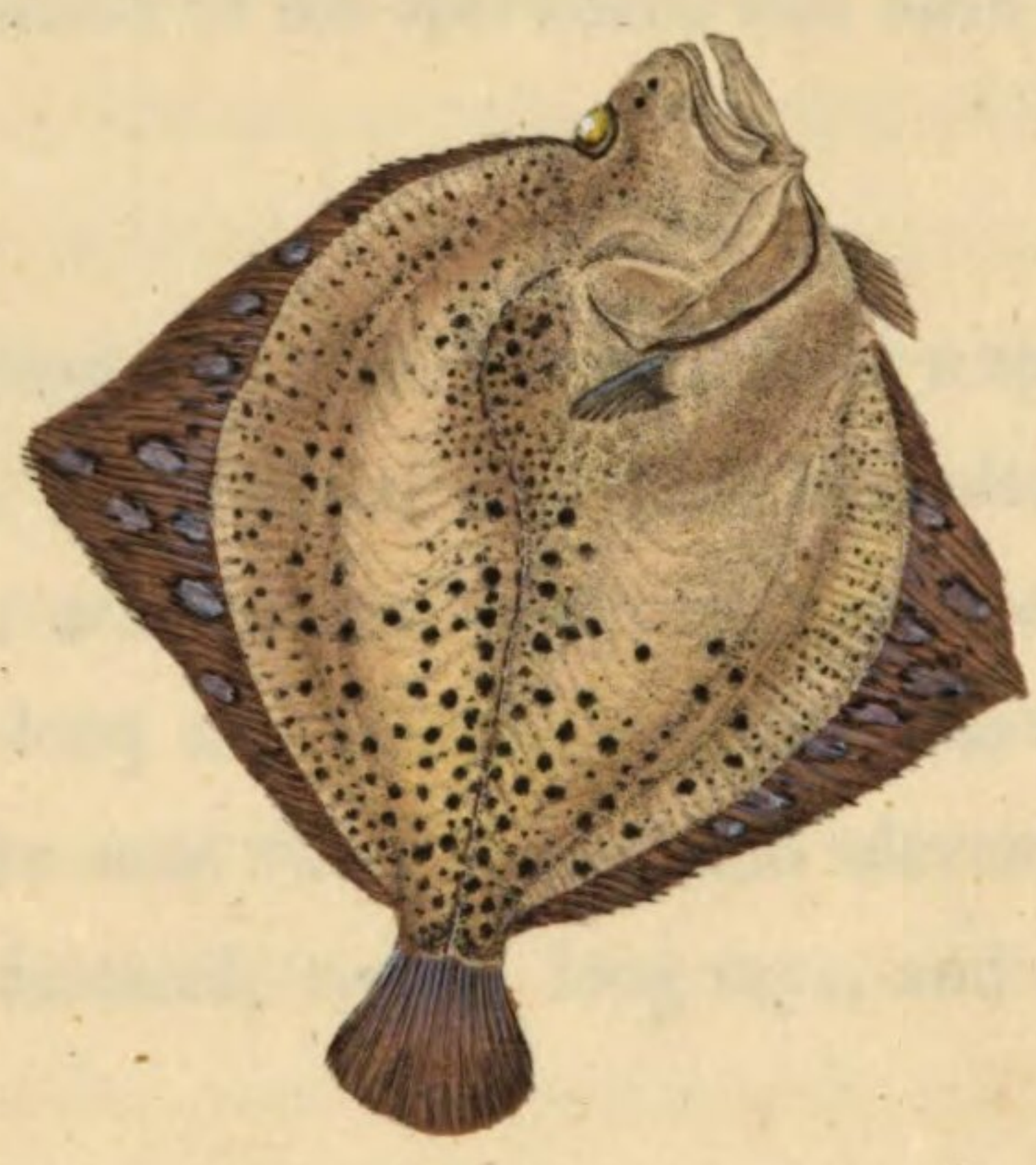
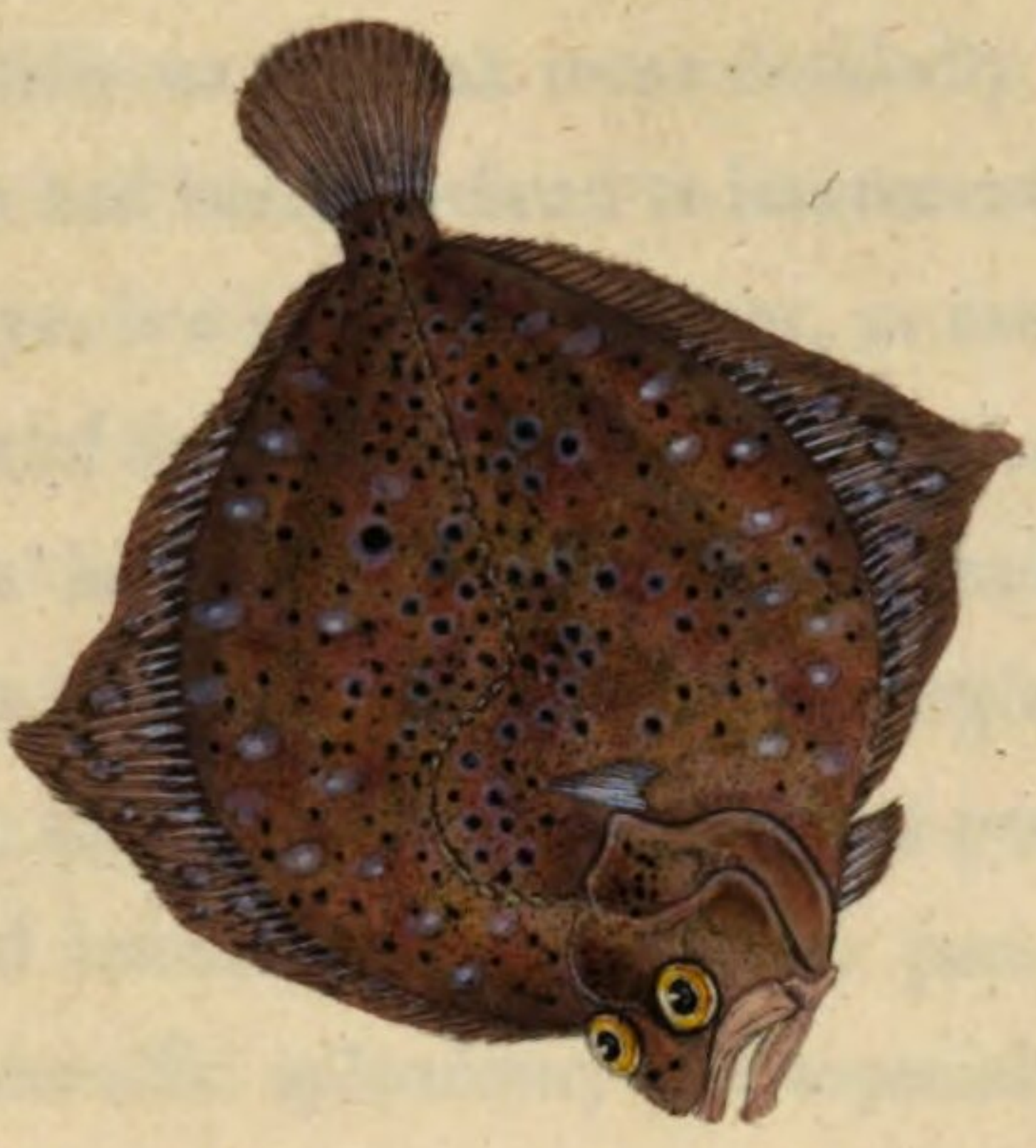
The characteristic golden coloured marks on the head of this fish are not described with sufficient accuracy by Linnæus. He speaks of them as forming a semilunar golden spot between the eyes, which is in reality not the fact. Bloch considers the species well distinguished by the six anterior teeth in the upper jaw being longer than the rest, observing at the same time, the defect of the Linnæan specific character, the golden mark being not always seen in the living fish, and invariably disappearing after its death. Salvian could never perceive any such golden marks in the young of this species, and Müller adduces, as a proof of its inconstancy, that in a drawing of this fish among the African animals collected by Bürman, upon which Linnæus had himself inscribed the title *Sparus Aurata*, no such golden spot was observable. This might be attributed to an oversight in the artist, or were it otherwise, such a circumstance is to be considered only accidental, for the actual existence of several marks of a fine golden hue on the head of this fish in a recent state cannot well be disputed: such are usual, although varieties may

PLATE LXXXIX.

possibly occur in which they are not perceptible. Those marks, however, as before intimated, do not occur precisely as Linnæus mentions; several specimens that we had an opportunity of inspecting on the coast of Wales, almost immediately after their capture, enables us to speak more decidedly on this point, than if our observations had been confined to less recent specimens. Immediately over each eye, is a plain, semi-lunar, or crescent formed space, scaly like the rest of the fish, but rather of a paler colour, and which nearly approximate in the middle of the forehead: those two species are circumscribed by a brilliant shining margin of a filmy texture, free from scales, of a moderate breadth, and possessing the colour as well as lustre, of burnished gold. Other parts of the head are glossed with this metallic splendour, and especially at the lower sutures of the gill covers; but the margins of the spots abovementioned are the most conspicuous. The dusky spot at the base of the lateral line was of a rich purplish hue. Linnæus notices a black spot in the tail of this fish, which we think Bloch may be correct in deeming accidental. Catti could not perceive any such mark, neither did any such spot appear in either of the specimens that have fallen under our observation.

The figure in the annexed plate is copied from a specimen twenty-one inches in length. In the dorsal fin, which extends nearly the whole length of the back, are thirteen spiny rays, and eleven soft ones; the pectoral fin is long and pointed, and contains eleven rays; the ventral six rays; the anal three spines, and eleven soft rays; and the tail, which is furcated, twelve long rays, and four short ones laterally.





London. Publ^d as the Act direct by E. Donovan. & F.C. & J. Livingston. May 1st 1866.

PLATE XC.

PLEURONECTES CYCLOPS.

CYCLOPS FLOUNDER.

*** PISCES THORACICI.

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER.

Left eye sub-vertical, and visible both sides.

PLEURONECTES CYCLOPS: oculis sinistro subverticali, in utro latere visu:

Our Pleuronectes Cyclops was discovered a few years since by Capt. Merrick of Aberfraw in Anglesea, North Wales, on the sea coast near his own residence: he observed it in a shallow cavity of one of the rocks at a small distance below high water mark, where it had apparently been recently left by the retiring tide. The fish was

PLATE XC.

alive when he perceived it, and particularly attracted his attention by being enveloped in a froth similar to that occasioned by the larva of the Cicadæ in which they conceal themselves on the leaves of plants, or what is generally denominated the *Cuckow-spit*.—Captain Merrick had the curiosity to preserve this little acquisition in spirits, and in our visit to that part of the island some time ago very liberally favoured us with the fish, and the above particulars relative to its capture.—We are the more minute in stating those circumstances as we consider it as a new fish, and not merely so as an inhabitant of the British Seas, but as a species of *Pleuronectes*.

Neither Linnæus, Gmelin, Bloch, Lacepede, or any other of the Ichthyological writers within our knowledge mention any species that can apply to the present. The specimen in our possession is small, the figures in the annexed plate which exhibit both the superior and lower surface being enlarged to admit of greater accuracy in delineation. The fish is an inch and three eighths in length, measuring from the tip of the jaw to the extremity of the tail: in other respects those figures convey a correct idea of the species.

It is highly probable this fish has by no means attained to its ordinary magnitude, the smallness of its size suggests that it is rather the young of some larger species, than a fish arrived at full maturity. This cannot indeed be adduced with any certainty of a species with which we are unacquainted except from one solitary specimen. As a species we can speak with more decision, notwithstanding its diminuteness, for it is sufficiently ascertained that fishes, unlike many other productions of the animal kingdom, receive in their first formation the figure of the parent brood so completely that from the smallest to those of the largest size, the naturalist has little difficulty in tracing

PLATE XC.

any particular species through all its gradations and varieties. With this impression we shall endeavour to point out a few characters in which our present species differs specifically from either of those already described.

Our fish is of the section "*oculis a latere sinistro*," or such as have the eyes placed on the left side of the head. Those species of the *Pleuronectes* genus that have the eyes on this side, amount to about twelve, exclusive of one or two varieties, which some authors think distinct. Of these, the only species that resembles it, even in a remote degree, are *P. Maximus*, *P. Rhombus*, *P. Argus*, *P. Punctatus*, *P. Mancus*, *P. Lunatus*, and *P. Japonicus*; and it agrees with neither of those. In the general contour, one of the strongest characters in fishes, it approaches nearest to the two first mentioned, those being the broadest of the Flounder tribe:—from *P. Maximus*, (Turbot) it differs, in having the surface perfectly smooth, and free from those tuberculations which are obvious in the smallest of that species. It approaches *P. Rhombus*, (the brill) more closely than the Turbot, in having the skin free from all asperities, but it is broader than this fish, being even more so than the Turbot; it also differs in having the middle rays of the dorsal and anal fin longer than the rest, in the lateral line being much more incurvated over the pectoral fin, and having a number of the dusky spots on the superior surface of the body, surrounded by a whitish ring.—Though, in this last particular, it seems to agree rather with *P. Argus*, it differs from that fish altogether in the deeper rhombic figure of the body.—*P. Punctatus* is somewhat broader, and is spotted, but does not still accord with this.—*P. Mancus* is spotted on the under surface as well as above, like our fish, but is of an oblong elliptic form, and is covered with rather large scales, while in our fish the scales are

PLATE XC

inconspicuous, the skin appearing entirely smooth.—The tail is rounded, which distinguishes it sufficiently from *P. Lunatus*, the latter having the tail lunated ;—and the smoothness of the tongue removes it from *P. Japonicus*, in which the tongue is rough. The other species are too remote to require comparison.

Should either of those dissimilar circumstances be attributed to the immaturity of our fish, in which the true character of the species might be supposed to be not entirely disclosed, there are one or two other particulars in which it differs so materially as to silence every doubt : this is the protrusion of the head, and situation of the left eye, the head being much further advanced than in either of the above mentioned fishes, and the left eye most singularly placed in the middle of the lateral edge or forehead. In a swimming position, therefore, as shewn in the figure, representing the lower surface, this eye appears nearly vertical, and from its situation, a very slight inclination of the body is sufficient to give the fish a perfect view of the objects on both sides of it, while its appearance directly in front, or when viewed on the lower surface, conveys precisely the idea we have of a cyclops animal. So singularly different is this from the rest of the pleuronectes that it seems to militate even against the character of the genus, which requires that both the eyes should be placed on one side : we were almost tempted, from this consideration, to constitute a new genus of this curious fish.

Owing to the elongation of the head and subvertical situation of the left eye, the commencement of the dorsal fin takes place behind the eye, a character of itself sufficient to remove it from either of the fishes above mentioned ; for in all of those, the dorsal fin commences close to the upper jaw, and is, in fact, in a greater or less degree, connected with it. This is fully exemplified in the Turbot

PLATE XC.

and the Brill; in both which the dorsal fin commences close to the upper jaw *.

Thus it appears the advancement of the head, and situation of the eyes sufficiently determine this to be a nondescript species, independent of other circumstances in which it differs from the species before described. To this it may be added, as secondary characters, that the body is of a greater proportional breadth than in any other of the *Pleuronectes* genus; and that the elongation of the middle rays of the dorsal and anal fin contribute to give it the appearance of still greater breadth than it really possesses. The whole contour of the fish is somewhat quadrangular. The lateral line is pretty much curved over the pectoral fin. The first dorsal fin contains sixty-six rays; pectoral fin eleven; ventral seven; anal fifty-two; and tail sixteen.

* See lower surface of the Brill, in plate 94 of this work.

and the first is that the shell is composed of the
upper and lower valves, the upper valve being
the larger and the lower valve the smaller.
The upper valve is the one which is attached to the
body of the animal, and the lower valve is the one
which is detached from the body of the animal.
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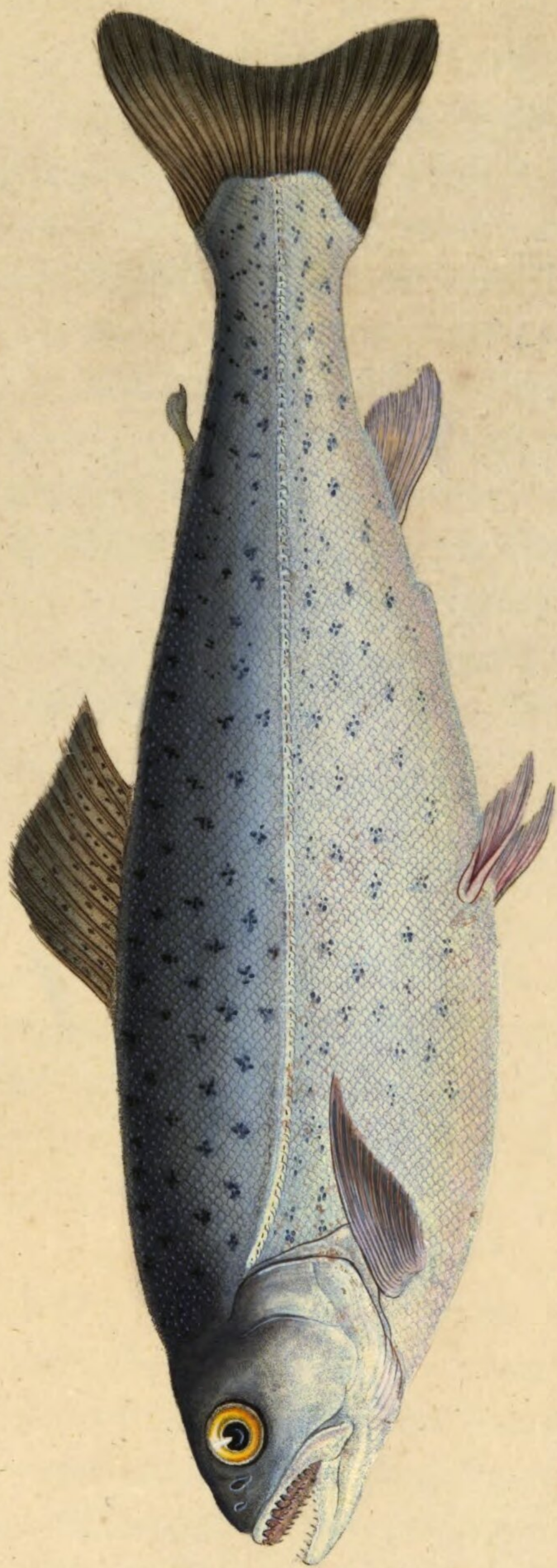


PLATE XCI.

SALMO CAMBRICUS.

SEWEN.

*** PISCES ABDOMINALES.

GENERIC CHARACTER.

Head smooth, and compressed. Mouth large: lips small: tongue white, cartilaginous, and moveable: teeth in the jaws, and upon the tongue. Eyes moderate, and lateral. Branchiostegous membrane with from four to twelve rays; gill-cover of three plates. Body long, covered with rounded and very finely striated scales: back convex: lateral line straight, and nearest to the back: posterior dorsal fin fleshy without rays: ventral fin of many rays.

SPECIFIC CHARACTER

AND

SYNONYMS.

Head short and sloping: lower jaw longest: body silvery, above greyish, with dusky-purplish cruciform spots: tail slightly furcated.

SALMO CAMBRICUS: capite declivi, maxilla inferiore longiore, corpore argenteo, supra cinerascens maculis cruciformibus fusco-violaceis, cauda sub-furcata.

SEWEN or SEWIN. *Donov. Tour. South Wales and Monmouthshire. v. 1. p. 237.*

GREY. *Penn. Brit. Zool. v. 3. p. 295. n. 144.*

SALMO SCHIEFFER-MULLERI. *Bloch. Ichth. Deutsch?*

PLATE XCI.

Mr. Pennant is uncertain whether the grey (which he believes to be the Sewen of South Wales) is not a mere variety of the Salmon; but on the authority of Mr. Ray he describes them separately. Ray tells us it is a strong fish, that it does not ascend the fresh waters till August, when it rushes up with great violence; that it is rarely taken, and not much known. "The inhabitants of South Wales," adds Mr. Pennant, "seem extremely well assured, that it is a distinct species from the Salmon. They appear in the Esk in Cumberland, from July to September, and are then in spawn. The lower jaw grows hooked when they are out of season." "The head is larger in proportion than that of the Salmon. In the jaws are four rows of teeth, and on the tongue are eight teeth. The back and sides, above the lateral line, of a deep grey, spotted with a number of purplish spots. The belly silvery: the tail even at the end." "This we believe to be the Sewin, or Shewin of *South Wales*. The description above, was communicated to us by Dr. Roberts, of Herefordshire." *Penn. Brit. Zool.*

The Sewen differs from the common Salmon, (*Salmo salar*) in various particulars that will not fail to strike the eye of the judicious naturalist on comparing the two fishes. The general contour of the whole fish is slightly dissimilar; the head is shorter and more sloping; while the lower jaw extends rather beyond the upper one, the precise contrary of which is observable in the common Salmon. The back is of a pale greyish colour, glossed with blue, and by no means so dark as in the common Salmon; this greyish colour prevails under the scales, from the back to the lateral line, beneath which, the whole fish is of the brightest silver. Both on the back and sides, above and below the lateral line, the body is marked with dusky purple spots of a roundish shape, which, on close in-

PLATE XCI.

spection, appear to be somewhat cruciform: the lateral line is straight, and placed rather lower than in the generality of fishes. The tail is slightly forked, but not semilunated as in the common Salmon. When the flesh is cut it is of a pale red. In point of size, the Sewen rarely exceeds twelve or fifteen inches, weighing from one to two pounds.

This fish, which is almost peculiar to Wales, and is found in the greatest abundance in the southern parts, is of the migratory kind, appearing on the sea coasts, and in the rivers of that country during the summer months, from May to September, and then returning to the sea. We have met with this fish both in South and North Wales, but in the greatest plenty on the coasts of the two maritime counties, Glamorganshire and Carmarthenshire: it is an excellent and delicate fish for the table, and is held in high repute by the inhabitants of Wales.—The above passages are repeated from our observations on this curious fish, in a “Descriptive Sketch of the Cambrian Principality” lately submitted to the public. To this we can only add what appears to us a sufficient character after the Linnæan manner, by which the species may be discriminated; and to enumerate some few slight particulars, which, in a work designed for general information, were purposely omitted. The first dorsal fin usually contains eleven rays, the second is fleshy and destitute of rays: in the pectoral fin are fourteen rays: ventral nine rays: anal ten rays: and in the tail twenty-eight, including the short lateral rays at the base.



PLATE XCII.

GADUS LOTA.

BURBOT.

*** PISCES JUGULARES.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Bearded: jaws equal: dorsal fins two: tail nearly oval

GADUS LOTA: cirratus, maxillis æqualibus, pinnis dorsalibus duabus, cauda subovali.

GADUS LOTA: cirratus, maxillis æqualibus. *Linn. Fn. Suec.* 315.

—*Gmel. Linn. Syst. Nat. T. 3. p. 1172.*

n. 14.

Gadus dorso dipterygio, ore cirrato, maxillis æqualibus. *Art. Gen.*

22. syn. 38.

Mustella fluviatilis. *Will. Ichth. p. 125.—Ray. pisc. p. 67.*

BURBOT. *Penn. Brit. Zool. v. 3. p. 199. n. 86.*

PLATE XCII.

The Burbot is the only fish of the *Gadus* genus that resides constantly in fresh waters, the rest of this numerous tribe inhabiting the sea. This species prefers clear waters and rivers not greatly exposed to the agitation of winds and currents, at the bottom of which it lurks for better security in hollows and cavities between stones, where it can watch the smaller fishes and aquatic insects, on which it preys as they swim over it, and dart, unperceived, upon them from its hiding place. The greatest enemy of the Burbot is the Perch, but in the lake of Geneva, where those fish abound, and in other lakes and rivers on the Continent, the Silure (*Silurus Glanis*) is to be numbered among its most ferocious destroyers. When pressed by hunger, the Burbot attacks the Stickleback, but to no small disadvantage, and he is even sometimes beaten off by the resistance this little fish is able to make with the strong aculeated processes on its back and sides.

This fish is natural to all the countries of Europe: it is also found in the lakes of Siberia, and, according to some writers, the same species occurs in the East Indies. In England it is a local fish, being found only in a few of our rivers. Pennant says in the Trent, but in greater plenty in the river Witham, and in the great East Fen in Lincolnshire. The Burbot is known to live to a great age, and to attain to a considerable size. Pennant says, the largest he ever heard of being taken in our waters, weighed between two and three pounds, but that abroad they are sometimes found of double that weight. Other writers speak of those found in the North of Europe growing to the length of three feet, and weighing twelve or fourteen pounds. This fish is in great repute for the excellence of its flesh, which is white and delicate; the liver also is esteemed a delicious morsel, but the eggs, on the contrary, are deemed unwholesome, or even poisonous. As

PLATE XCII.

this fish is tenacious of life, it will subsist for some time on small fishes and raw meat, if kept in a cold and damp situation. The spawning season is in December and January. It bears the character of a fertile, cunning, and voracious fish.

The head of this species is large, flattish, and shaped in some degree like that of a toad; the body is long, and bears a distant resemblance to that of an Eel, but is broader in proportion to its length than that fish. It is from the latter circumstance this fish has derived the trivial English appellation of Eel-pout, and for the same reason the Dutch call it *Putael*. The colour of the body varies from a dark to pale brown, and is marked with greenish olive, fuscous, and yellowish, disposed in blotches and bands, and is sometimes thickly spotted with blackish. The surface is smooth, the scales being very minute, and the body covered with a slimy mucous. The teeth are very numerous, small, and disposed in about seven rows in each jaw: the lateral line is straight, and parallel with the back: the first dorsal fin is of a sub-triangular form, and contains eleven rays; the second dorsal fin, which commences immediately behind the first, continues close to the region of the tail, and consists of sixty-one rays: in the pectoral fin are sixteen rays: the ventral fin, which is fleshy, contains seven rays, the exterior one of which, is short, and the next longer than either of the others: the anal fin includes fifty rays; and the tail, which is nearly of an oval figure, and very slightly pointed, thirty-five rays.



PLATE XCIII.

CYPRINUS BRAMA.

BREAM.

*** PISCES ABDOMINALES.

GENERIC CHARACTER.

Mouth without teeth: gill-membrane with three rays: body smooth, and whitish in general: ventral fins usually with nine rays.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body broad, with the back arched: anal fin about twenty nine rayed, and with the other fins fuscous.

CYPRINUS BRAMA: latus dorso arcuato, pinnis fuscis: anali radiis sub. 29.

CYPRINUS BRAMA: pinna ani radiis 27. pinnis fuscis. *Linn. Fn. Suec.* 360.—*Gmel. Linn. Syst. nat.* 1436. n. 27.

CYPRINUS pinnis omnibus nigrescentibus, pinna ani ossiculorum 27. *Art. gen.* 6. *syn.* 4. *sp.* 22.

Brama primo radio pinnæ 5 dorsalis simplici &c. *Klein. miss. pisc.* 5. p. 61. n. 1.

Brachsen, *Gesner, Meyer, &c.*

BREAM. *Penn. Brit. Zool.*

PLATE XCIII.

This fish is found in great lakes and in the deeper parts of still, or gently flowing streams. Their food consists of herbs, moist earth, and worms, which they find at the bottom of the water. The spawning season is in May, or as early as the end of September, when the weather is warm and favourable; at the commencement of the spawning season they ascend large rivers, and deposit their eggs, which are of a reddish colour in the most secure places among the plants that grow in the water.

The Bream is a fish considered in England as insipid, and of little consequence. On the continent however, especially in the territories of the King of Prussia; in the states of Holstein, Mecklenburgh, Livonia, and in Sweden, the Bream is held in high repute. They abound in the lakes of those countries, the fisheries of which are rented at a high price. The flesh of this fish is white and not ill flavoured. It is observed to live to a great age, and to attain to a considerable size, growing commonly to the length of a foot or eighteen inches, and sometimes even to between two and three feet. Those of twelve or fourteen pounds weight are preferred for the table.

It is easily distinguished by the great breadth and proportionate lateral compression of the body: the head is small; the back is remarkably arched, and the fins somewhat falcated and dusky; the lateral line placed very low and waved irregularly. The colours of this fish while living and in the water are beautiful, the upper parts partaking of all the various hues of green and olive, changeable to purple, and golden yellow, and as it descends towards the lateral line becoming of the purest silver, which latter pervades the whole of the lower parts of the fish. The brilliancy of those colours are evanescent in the extreme, vanishing as the creature dies, the purple fading, and the

PLATE XCIII.

green changing to a dusky colour glossed with silvery blue. The former hues may be revived in some measure several hours after the fish dies by moistening it with fresh water. The fishermen assert that when the Breams ascend rivers they are collected into small shoals, each of which is preceded by a leader who directs the course of the shoal and differs in appearance from the rest. This is called by our fishermen the "Queen bream," and by the French "*Chef de brêmes*." This kind of Bream is particularly described by Bloch, the one he examined was thirteen inches long, and differed in the following particulars from the common breams, the eye was large, and the iris blueish: the head, and bottom of the fins of a fine red purple, the last bordered with a reddish band: the scales were smaller and thicker: the body also was marked with several red spots of an irregular form, and was covered with a viscous matter. It is conjectured this may be a cross breed between the *Cyprinus Erythrophthalmus* and the Bream. In the spring the Bream is sometimes found with a number of minute whitish tubercles on the body, the effect of some malady to which this fish is liable.

The number of rays in the anal fin are by no means sufficiently constant as to afford us a criterion of the species, they are usually about twenty seven in number but are not so uniformly. In the dorsal fin of one specimen we examined are twelve rays; in the pectoral fin eleven rays: in the ventral fin eight rays, and the tail twenty two.

green changing to a dusky color, and with silvery blue. The
 former may be removed in some cases, but the latter
 has been by poisoning it with fresh water. The natural
 color when the leaves are young is a pale green, and they
 are covered with a fine, white, downy hair. The leaves
 are each of which is provided by a single white hair, the
 the shoot and others in appearance from the rest. This is called by our
 farmers the "Queen's breast", and is the same as the
 The kind of breast is particularly marked by the
 organized was thicker, longer, and darker in the following
 leaves than the common breast, the eye was large, and the
 highest the head, with a small, dark, and a large, pale
 the last, which was a small, dark, and a large, pale
 thick, the body was small, with a small, dark, and a large, pale
 the head was small, with a small, dark, and a large, pale
 this may be a small, dark, and a large, pale
 the breast. In the spring the breast is sometimes found with a
 number of small, white, and a large, pale
 mainly to which the head is large.

The number of eggs in the nest is by no means constant,
 constant as to the number of the eggs, they are usually
 about twenty, but they are not so many. In the
 and no of one specimen we examined are twelve, and the
 the eggs are: in the nest, and the eggs are
 but they are not so many. In the
 and no of one specimen we examined are twelve, and the
 the eggs are: in the nest, and the eggs are
 but they are not so many. In the
 and no of one specimen we examined are twelve, and the
 the eggs are: in the nest, and the eggs are



PLATE XCIV.

PLEURONECTES FLESUS.

FLOUNDER.

*** PISCES THORACICI.

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Eyed side with the scales at the base of the pectoral fin, and lateral line larger, and somewhat asperous.

PLEURONECTES FLESUS: latere oculato ad basin pinnæ pectoralis lineaque lateralis squamis majoribus subasperis.

PLEURONECTES FLESUS: linea laterali aspera spinulis ad pinnas.
Linn. Fn. Suec. 327.—*Gmel. Linn. Syst. nat.*
1229. *sp.* 7.

PLATE XCIV.

PLEURONECTES spinulis plurimis in latere superiore. *Bloch. Fisch.*

Deutschl. 2. p. 39. n. 3. t. 44.

Pleuronectes linea laterali aspera, spinulis ad radices pinnarum in latere oculato. *Art. spec. 59.*

Pleuronectes oculis a dextra, linea laterali aspera, spinulis superne ad radices pinnarum in latere oculato, *Art. Gen. 17. Syn. 31.*

Passer fluviatilis. *Rondel, Gesn. &c.*

FLOUNDER. *Brit. Zool. Vol. 3. p. 229. n. 104*

The *Pleuronectes Flesus*, or true Flounder, approaches in the general appearance so nearly to the Plaise, *Pleuronectes Plattessa*, and is so frequently confounded with it, that it will not be amiss to advert to both, in order to point out the precise character by which they are to be distinguished. The Plaise is usually of a much larger size than the Flounder; the body rather wider, and its thickness proportionately less. The head of the Plaise is beset behind the left eye with a row of distinct tubercles, that reach to the lateral line, none of which appear on the head of the true Flounder. The upper surface of the body and fins, are marked with large roundish spots of a bright orange colour, which are paler or deeper in different fishes, but are almost invariably present, and those are never, or very rarely seen on the Flounder, although this fish is subject to more considerable variations, than almost any other. The flesh of the true Flounder is firmer, and of a flavour far superior to the Plaise; it is also much less frequent, the Plaise being the fish commonly sold for Flounders in the London markets.

PLATE XCIV.

The Flounder inhabits both the salt and fresh waters, and is found equally in the North and Baltic Seas, and in the larger rivers that have access to the sea. It inhabits likewise, many parts of the British Seas, and rivers, the Thames especially, where at certain seasons, as spring, and autumn, they are taken in great plenty. Those found in the sea, are larger and more robust than such as are caught in the rivers, but the latter are preferable for the table. It is observed, that the Flounder never attains to any considerable size in the rivers, or even in the open sea; the largest mentioned by Pennant, Bloch, and others, weighed no more than six pounds; we once saw a Flounder that weighed between four and five pounds, after having a great portion of the lower half of the back bitten off by a shark, or some other voracious fish: it was caught on the shore of the Irish channel, and is the largest we ever saw. In the beginning of November 1800, a Flounder of uncommon magnitude is said to have been captured upon the Duddon sands, Lancashire, that weighed forty five pounds, and measured from the nose to the extremity of the tail, four feet and an inch. Whether this enormous fish differed specifically from our common Flounder cannot be determined, we repeat it on popular report, admitting only the probability of such an extraordinary circumstance.

The varieties of the common Flounder, in point of colour, are more numerous beyond example, than in any other species, insomuch that it is scarcely possible to find even two exactly corresponding. The prevailing colour on the upper surface is brown, and the lower white. Sometimes the former is marbled with silvery white: with white tinged with yellowish, or of a rosy hue: in others, either of the latter tints constitute the ground colour, and the spots are brown of various hues. Those having either the anterior or posterior half of a

P L A T E X C I V .

deep brown, and the rest of a light colour are frequent. Others of a more uniform appearance, have the whole of the superior surface olivaceous brown, and the lower white. The variety called by the fishermen the Sea Flounder, is nearly as dark on the lower surface as above, and is more variegated with livid and yellow, than in the fresh water Flounders. This marine kind instead of being being dark is sometimes pale on both surfaces, the pervading colour partaking either of a yellowish, or rosy hue.—The specimen selected for delineation, is one of that singularly beautiful variety of fresh water Flounders which is often taken in the Thames, the ground colour of which varies from whitish to deep rose colour, and is elegantly mottled, or otherwise variegated with brown: the length of this fish was six inches and a half. A Flounder rather exceeding this in size, and perfectly of a rose colour was taken a few years ago in the river Thames, and preserved in the late Leverian Museum. This fish was first described by Dr. Shaw, in the Naturalist's Miscellany, as a new species under the name of *Pleuronectes roseus*, rose coloured Flounder; and is again repeated in the General Zoology of that author* :

* This fish is described specifically by Dr. Shaw, as the "*Pleuronectes roseus*, Rose coloured Flounder, with the eyes towards the right."—"General proportions, those of a Flounder: length about nine inches: colour most delicate rose, slightly tinged in some parts with yellowish, and in other with silvery white: lower surface paler, or very nearly white: fins and tail pale yellow-brown: skin apparently destitute of scales, though marked by very minute, scale-like reticulations, and void of all asperity, either on the side line, or at the origin of the fins." Shaw's *Nat. Mis.* v. 7. pl. 238.—*Gen. Zool.* v. 4. p. 2, 302.

The individual specimen thus described, being at this time before us, we are enabled to advert to a few circumstances, which attentively considered, will sufficiently demonstrate that the supposed species *Pleuronectes roseus*, is only a variety of the common Flounder.—The description corresponds in most particulars with the fish in question, but not entirely, and in one essential point, there is an evident oversight which ought

PLATE XCIV.

it is also introduced as a new British species in Dr. Turton's edition of the Gmelinian Systema Naturæ upon the authority of the work first mentioned. This fish is certainly not specifically distinct from the common Flounder, *Pleuronectes flesus* of Linnæus, but is one of the varieties before enumerated. There is finally another variation of this fish that merits particular remark, this is the reverse kind, in which the eyes and lateral line are situated on the left side instead of the right, as they appear in common. The reversed Flounder is described by Linnæus, Bloch, and a number of Ichthyological writers, as a distinct species. Pennant considers it a variety only, and we

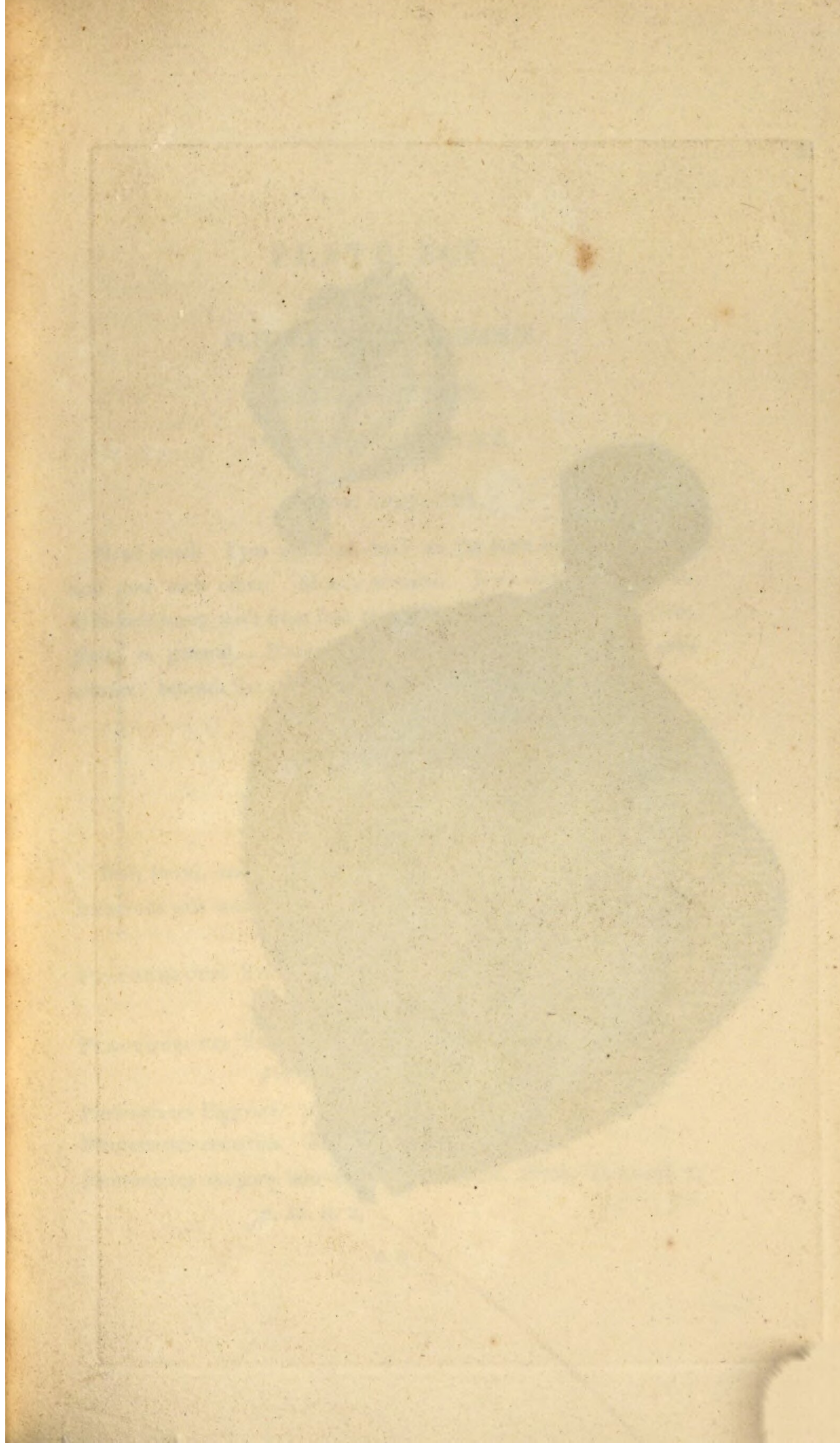
to be corrected; this relates to the extreme smoothness of the skin, which is stated to be void of all asperity either on the side line, or at the origin of the fins. If by this we are to understand the large subasperous scales which occur at the base of the pectoral fin, and which descends in a linear series a short way down on each side the lateral line, as in the common Flounder, the observation is inaccurate. The skin Dr. Shaw observes, appears to be only marked with scale-like reticulations without asperities, but in fact it has merely this appearance at the first glance, (except in those places where the true scales have been rubbed off,) and this is owing to the transparency of the scales assimilating with the pale colour of the skin to which they are attached: when attentively examined the remaining scales are apparent; they are perceptible to the touch, and perfectly visible with the aid of a glass. Those scales have not the asperity that is to be expected from the expression "*spinulis ad radices pinnarum*," adopted in the specific character of the common Flounder, neither have we scarcely ever observed the scales at the base of the fins in the latter so spinous as to merit this appellation. But they are as obvious in *Pleuronectes roseus*, as general in the common Flounder, being of a superior size to the rest, a circumstance determined by those scales which still adhere to the skin at the commencement of the lateral line, and at base of the pectoral fin; and even where the scales are obliterated, the region of the skin usually occupied by those larger scales, is marked with larger scale-like reticulations than the rest of the body, as is observable in this part of the common Flounder when deprived of the scales. There is besides a slight appearance of asperity in the scales at the base of the tail, as in the common

PLATE XCIV.

rather incline to his opinion. Such reverse Flounders occur more numerous with the ordinary sort than is commonly imagined: we have observed many. The fishermen maintain that it is by this characteristic circumstance, the two sexes of the common Flounder is to be distinguished.

In the dorsal ray of the fish selected for our figure, there were fifty five rays: in the pectoral fin, eleven: ventral, five: anal, thirty nine: and tail, eighteen.

Flounder. This is the only character by which *Pleuronectes roseus* could be specifically distinguished from *Pleuronectes flesus*, the colour of the body, as before shewn, constituting no criterion whatever of the species.—The only figures extant of the *Pleuronectes roseus*, is that in the Naturalist's Miscellany, pl. 238, and the same repeated in the General Zoology. This figure is ambiguous and very indifferent, the drawing of the head is lost; the eyes in particular are represented both of equal size, large, prominent, and placed exactly parallel to each other, while in the fish the very structures of the skull would prevent such a disposition of the eyes. In the fish itself they are disposed obliquely, one lower than the other, and differ in no respect from those of the common Flounder. The lateral line also, which is curved at the base, as in all the varieties of this fish, is delineated in the above mentioned figure as almost straight throughout.



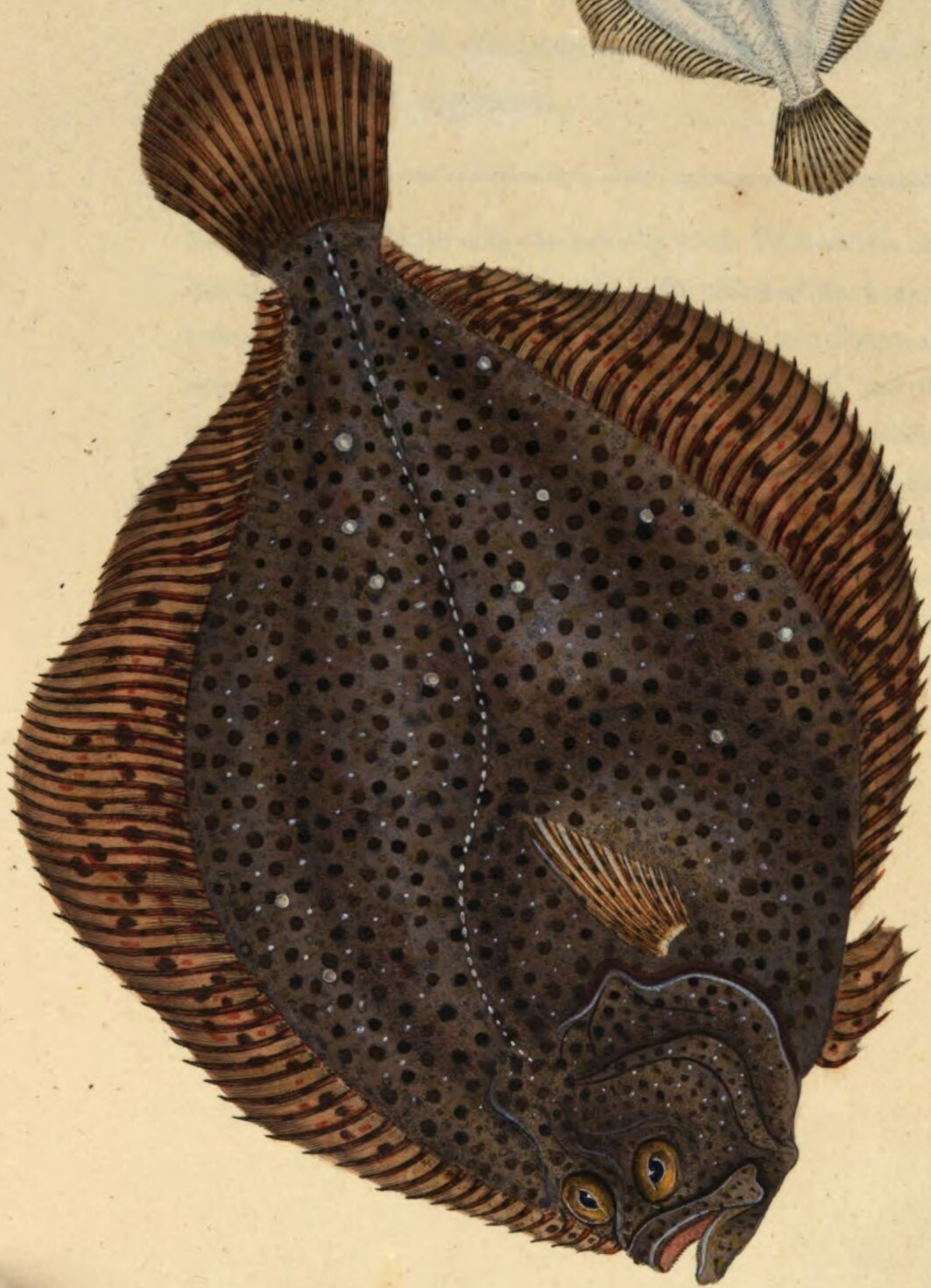


PLATE XCV.

PLEURONECTES RHOMBUS.

BRILL, OR PEARL.

*** PISCES THORACICI.

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body broad, and glabrous: above fuscous with black spots, and numerous pale dots: beneath white.

PLEURONECTES RHOMBUS: corpore lato glabro supra fusco nigro-maculato punctis pallidis numerosis; subtus albo.

PLEURONECTES RHOMBUS: corpore glabro. *Linn.—Mus. Ad.*

Fr. 2. p. 69.—Gmel. T. 3. p. 1235. sp. 12.

Pleuronectes Piggvarf. *Linn. It. Wgoth. 178.*

Pleuronectes arenarius. *Ström söndm.*

Pleuronectes corpore lato et glabro. *Bloch. Fisch. Deutschl. 2.*

p. 36. n. 2.

PLATE XCV.

Rhombus lævis: *Jonst. pisc. p. 99. t. 22.*—*Raii pisc. p. 32. n. 7.*

Will. ichth. p. 96.

Rhombus alter gallicus. *Bell. aquat. p. 141.*

PEARL. *Penn. Brit. Zool. v. 3. p. 238.*

The Brill, or *Pleuronectes Rhombus* ranks among the most common kinds of flat fish, being found in abundance on many of the sandy shallows in the North and Mediterranean seas, as well as in those on the coasts of Britain.

This species resembles the Turbot in its general appearance and outline; it is a firm and well-flavoured fish, though inferior to the former, and may be easily distinguished from it by the extreme smoothness of the skin, for it is destitute even of the slightest trace of those tuberculated aculeations which appear so conspicuous on the surface of the Turbot. In point of colour they differ also, the upper surface of the Brill being of a darker hue, or more inclining to fuscous, and having the spots of deep brown more numerous and diffused; besides which, there is an intermixture of livid yellow blotches, and a number of white dots besprinkled over the surface. The fins are nearly the same colour as the body, and are spotted and dotted in a similar manner. The lower surface of the body is white, as appears in the smaller specimen introduced in our plate. The dorsal fin extends from the upper jaw to which it is connected, close to the region of the tail. This fin contained, in one specimen we examined, sixty-five rays: in the pectoral fin were eleven rays: the ventral fin included six rays: the anal fin forty-eight rays; and the tail sixteen.

PLATE XCV.

The Brill and Turbot are considered the broadest of the Flounder tribe, but in this particular they are both inferior to our new species *Pleuronectes Cyclops*, which is distinguished by a greater proportional breadth than either. The ordinary size of this fish is commonly less than that of the Turbot. There are instances of its attaining to a much larger size than any of the Turbot hitherto discovered, not to mention the individual, supposed to be of this species, that was captured in the Italian Seas in the reign of the Emperor Domitian, which is reported to have measured twenty feet, or, as some say, as many ells in length * ! From the coast of Cornwall we have obtained it of a large size, by the name of Kite, or Kit Fish.

Mr. Pennant describes this fish under the English name of Pearl. We rather prefer that of Brill, the latter being the appellation by which it is known in the markets of the metropolis.

* The enormous fish alluded to, is mentioned by Pliny, under the name of *Rhombus*. Artedi believes it of the same species as our fish, and his opinion is received by most modern authors. From the writings of Pliny it may be learned, however, that the eyes of the fish known among the ancient Romans, by the name of *Rhombus*, were on the right side, as in the Sole, instead of the left, as in the *Pleuronectes Rhombus* of modern authors. Whether, therefore, this fish was an individual of our species, admits of doubt. Domitian is said, by Juvenal, to have ludicrously ordained a *senatus consultum* to determine on the best mode of bringing this enormous fish to table.

PLATE XCV

The Bull and Turbot are considered the members of the Turbot
tribe, but in this particular they are both inferior to our species
Pleuronectes Cyclops, which is distinguished by a greater proportional
breadth than either. The ordinary size of this fish is considerably less
than that of the Turbot. There are instances of its attaining to a
much larger size than any of the Turbot tribe discovered, not to
mention the individual supposed to be of this species, that was cap-
tured in the Indian seas in the reign of the Emperor Dromius,
which is reported to have measured twenty feet in length, and
to weigh six hundred pounds. From the coast of Cornwall we have ob-
tained it of a large size, by the name of Bull, or Kipper.

Mr. Pennant observes that under the English name of Turbot
we rather mean that of Bull, the latter being the designation by
which we know in the markets of the metropolis.
The enormous fish alluded to, is mentioned by Pliny, under the name of Turbot.
A small variety of the same species is now sold, and is supposed to be the
modern turbot. From the weight of this, and the fact, however, that the
fish is known among the ancient Greeks by the name of Turbot, we are
warranted to believe that the fish mentioned by Pliny is the same as the
modern turbot. The fish is now sold in the markets of the metropolis
under the name of Bull, and is supposed to be the same as the
modern turbot. The fish is now sold in the markets of the metropolis
under the name of Bull, and is supposed to be the same as the
modern turbot.



PLATE XCVI.

LABRUS JULIS.

INDENTED-STRIPED WRASSE.

** PISCES THORACICI.

GENERIC CHARACTER.

Teeth acute: lips simple: branchiostegous membrane with about six rays, and scaly covers: dorsal fin with a slender skin beyond the end of each ray: pectoral fin acuminated: lateral line straight.

SPECIFIC CHARACTER

AND

SYNONYMS.

Above fuscous and green: beneath white, with a fulvous dentated stripe each side: two fore-teeth longest.

LABRUS JULIS: supra fuscus viridisque subtus albus vitta fulva utrinque dentata, dentibus duobus primoribus supra longioribus.

LABRUS JULIS: lateribus cœrulescentibus, vitta longitudinali fulva utrinque dentata. *Linn. Mus. Ad. Fr. 2. p. 75.*

—*Gmel. Linn. Syst. Nat. 1288. sp. 15.*

PLATE XCVI.

Labrus palmaris varius, dentibus duobus majoribus maxilla superioris.

Art. gen. 34. *syn.* 53.

LABRUS JULIS. *Bloch. t.* 287. *f.* 1?

We are happy to introduce this elegant species of *Labrus* into the *British Fauna* upon indubitable authority. In the summer of the year 1802, we received a specimen of it in a recent state, among other fishes caught upon the coast of Cornwall, where they were procured from the fishermen by Miss Pocock, and obligingly communicated to us. As a native of the Mediterranean sea, this fish is mentioned by various writers, but as a British species it is perfectly new, not having been recorded as such by either Willughby, Ray, Borlase, Pennant, or any other writer on the Zoology of this country. The Cornish fishermen, we understand, call those fishes young Sturgeons.

The specimen sent to us rather exceeded the length of seven inches; it was of a slender, or elongated form, and remarkable for the elegant distribution of its colours, which were changeable in various directions of light; but the most striking peculiarity was the broad dentated stripe, extending along each side, from the head nearly to the tail, the colour of which was silvery and fulvous, and with the rest of the colours, produced an effect equally singular and beautiful. The dorsal ray contained nine spiny rays, and thirteen soft ones: pectoral fin twelve rays: ventral one spiny ray, and five soft ones; anal two spiny and thirteen soft ones; and the tail thirteen rays.

This fish has arrested the attention of many ichthyologists among the ancients as well as moderns, the former of whom, pronounced it

PLATE XCVI.

the most beautiful of European fishes. It may be collected from the works of Elian, Aristotle, Salvian, Aldrovandus, and others, that this fish is common at certain seasons in the Mediterranean. Elian speaks of it, however, as a poisonish fish, and of such a venemous nature, that it would be unsafe to eat it, or even the flesh of any other fish that had been touched by it. Galen mentions it, on the contrary, as wholesome food. The male of this species is distinguished according to some writers, by having the back of a black colour instead of green, as in the female; but it appears in this, and various other respects, to be an extremely variable species. Neither are its habits and manners correctly known; it is generally asserted, that it swims in small shoals; Aristotle speaks to this effect, but this is contradicted by Salvian and others, who describe it as a more solitary fish. It must be, indeed, confessed, that the history of the *Labrus Julis* altogether, as related by the different writers above-mentioned, is obscure and contradictory, and that little reliance can be placed in their observations till we become better convinced of their accuracy, through the medium of modern ichthyologists.



the most beautiful of human color. It may be collected from the
 works of Klian, Aristotle, and other ancient writers.
 It is common at certain seasons in the Malabar coast.
 of it, however, as a poisonous herb, and of such a reputation
 that it would be unsafe to eat it, or even the flesh of any animal
 that had been touched by it. Galen mentions it in the context
 as wholesome food. The taste of this species is distinguished
 coming to some writers, by having the back of a black color, instead
 of green, as in the leaves; but it appears in this, and various other
 respects, to be an extremely variable species. I have seen it in
 manner contrary to what is generally asserted, that it exists in
 small shoots. A small shoot is in fact, but this is contradicted
 by Sylvius and others who describe it as a more solitary herb. It
 must be, indeed, confessed, that the history of the Lycopodium
 genus, as related by the different writers above mentioned, is so
 scarce and contradictory, and that little reliance can be put on their
 observations till we become better convinced of their accuracy, through

the medium of modern ichthyologists.
 and observations on the genus Lycopodium, in which it is
 distinguished from other genera, in its habit, its
 and its reproductive organs. It is a small, creeping
 plant, with small, round, green leaves, and small, round,
 thick, and succulent, and very tender, and it is
 used for food by the natives of the Malabar coast.
 The Lycopodium is a small, creeping plant, with
 small, round, green leaves, and small, round,
 thick, and succulent, and very tender, and it is
 used for food by the natives of the Malabar coast.

This is a small, creeping plant, with small, round, green leaves, and small, round, thick, and succulent, and very tender, and it is used for food by the natives of the Malabar coast.

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Blenny, smooth	<i>Blennius pholis</i>	85
Blenny, common	<i>Blennius gattorugineus</i>	85
Bream	<i>Caprosoma bream</i>	92
Brill	<i>Phycodonta brill</i>	92
Bull head, river	<i>Cottus cotius</i>	93
Burbot	<i>Lota lota</i>	93
Cyprin	<i>Cyprinus cyprinus</i>	93
Dace	<i>Cyprinus dace</i>	77
Drum	<i>Scophthalmus maximus</i>	84
Flounder, common	<i>Platichthys flesus</i>	94
Gilt-head	<i>Auratus auratus</i>	89
Gyrfish	<i>Salmo gyrfish</i>	88
Haddock	<i>Macrurus haddock</i>	73
Lamprey	<i>Petromyzon lamprey</i>	81
Shad	<i>Alosa shad</i>	81
Spot	<i>Scopelogadus maximus</i>	81
Sprat	<i>Scopelogadus sprat</i>	71
Sucker	<i>Catostomus commersoni</i>	72
Sucker, small	<i>Catostomus commersoni</i>	72
TROUT	<i>Salmo trutta</i>	82
Wrasse, rock	<i>Labrus labrus</i>	71
Wrasse, striped	<i>Labrus fasciatus</i>	70
Wrasse, spotted	<i>Labrus gulosus</i>	70

Donovan, Edward, 1768-1837

The natural history of British fishes including scientific and general descriptions of the most interesting species and an extensive selection of accurately finished coloured plates, taken entirely from original drawings, purposely made from the specimens in a recent state, and for the most
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